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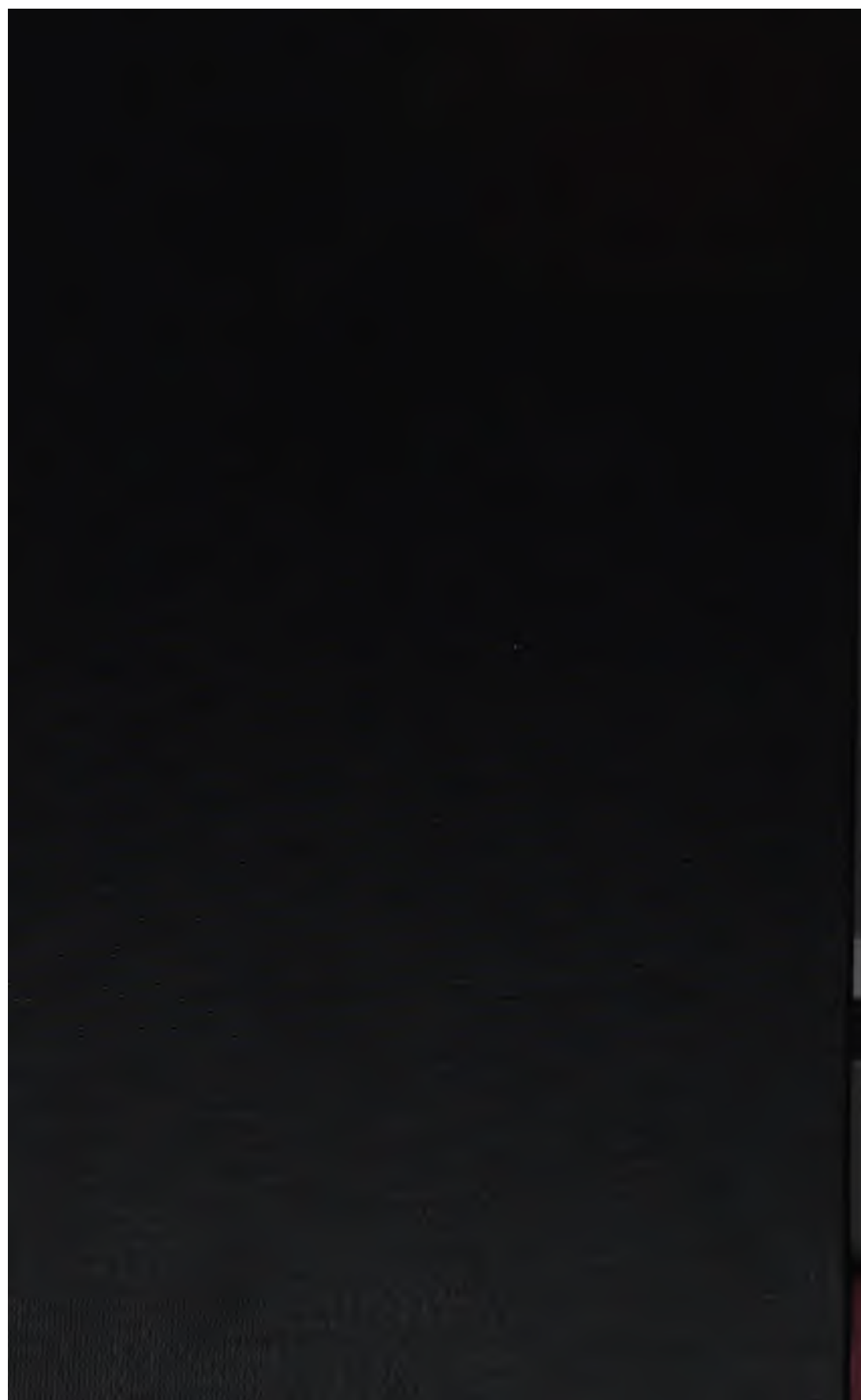
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**THE GIFT OF
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January 11, 1921



*Yours truly,
J. H. Kellogg*

Ladies' Guide

— IN —

HEALTH and DISEASE

Girlhood,
Maidenhood,
Wifehood,
Motherhood

BY J. H. KELLOGG, M. D.,

Member of the British Association for the Advancement of Science, The Société
d'Hygiène of France, The American Public Health Association, Editor
of "Good Health," Author of "The Home Hand-book of
Domestic Hygiene and Rational Medicine,"
"Man, the Masterpiece," and Va-
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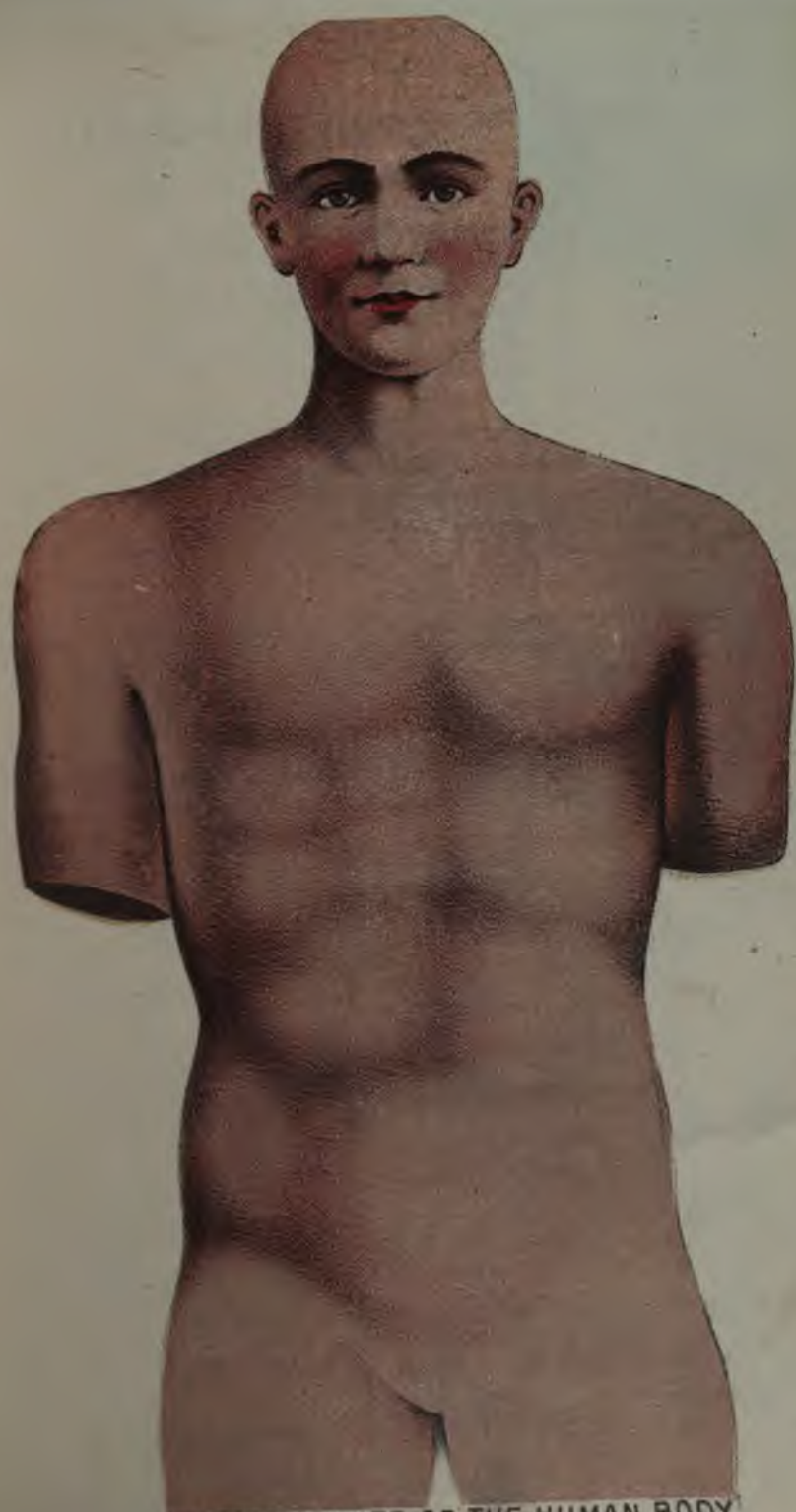
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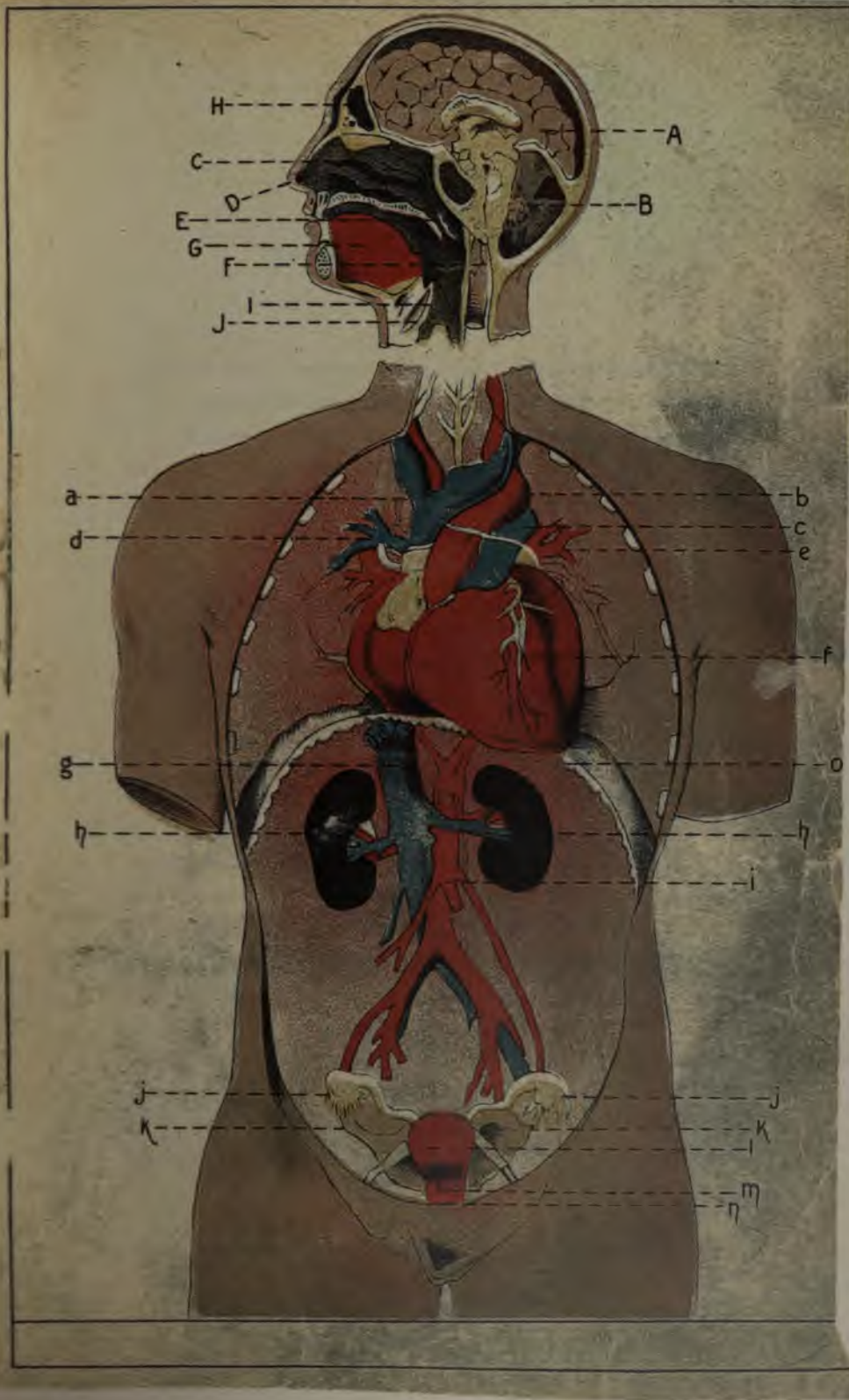


DISSECTED PLATE OF THE HUMAN BODY.

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PREFACE.

THE very remarkable increase in the number and frequency of that very large class of maladies familiarly known as "diseases of women" observable in modern times, especially among the women of the more civilized nations, and those of this country in particular, has attracted the attention of many intelligent physicians. The ailments from which woman suffer constitute a large part of the practice of the majority of physicians, and probably contribute more to the support of the medical profession than any other class of maladies. So numerous and complicated has this class of diseases become in recent times, that a new race of specialists has sprung up, who confine themselves exclusively to this branch of practice.

The evidences of a marked deterioration in the physique of American as well as other civilized nations within the last century are too patent and too numerous to be ignored. Civilized women are constantly regarded as "the weaker vessel" as compared with their husbands and brothers.

The fact to which we have above referred has received many different interpretations. One author attributes the increasing physical infirmity of woman to her increasing intellectuality; another, to faulty methods of education, particularly the co-education of the sexes. Still another, and an eminent authority, attributes the failure in health from special ailments of so large a proportion of the female part of the population

to the malign influence of some subtle agency native to the country and wholly beyond the reach of human control. One of the prime objects of this work is to show that the suffering of civilized women from special diseases above those of other races, is not due to injurious climatic influences, nor to excessive mental culture and development; but to a lack of physical culture, defective home training, improper dress, sedentary habits of life, errors in diet, too much excitement, especially during the developing period, and numerous other causes which may be removed by proper attention on the part of parents, if the effort is begun at a sufficiently early age.

Believing that the growing delicacy and increasing susceptibility to disease and lack of endurance so manifest, especially among English and American women, is chiefly due to neglects of various kinds arising from ignorance of the laws which relate to the proper development and maintenance in health of the special set of organs characteristic of the sex, we have deemed it best to present as an introduction to the more practical portion of the work a concise description of these organs and their functions. We are well aware that in the minds of a few the anatomical portion of the work will be considered objectionable; but this has not deterred us from presenting this part of the subject in such a manner as we hope will accomplish the desired end; viz., the education of those into whose hands the work may fall respecting the important functions considered, to such a degree as to enable them to avoid, if they desire to do so, the pitfalls into which so large a share of their sisters fall, thereby preserving and increasing their store of that choicest of all possessions, **GOOD HEALTH**, and fitting themselves to transmit the same as a priceless legacy to their children.

The old adage, "A little knowledge is a dangerous thing," has done a vast deal of mischief both in deterring those fitted to impart useful information on these topics from giving it, and discouraging those who needed such instruction from seeking it. We have never yet known a case in which a woman was injured by scientific information respecting her own body and its functions. We believe that enlightenment on this and kindred topics, and on all that relates to the physical, mental, and moral well-being of woman, is the surest means of correcting some of the greatest evils which curse the race at the present time, and which are sapping the very foundations of society.

In order to point out in the clearest manner possible the way of escape for women from the thralldom of aches and pains and "weaknesses" in which the sex is as a class enslaved, we have endeavored to trace the outlines of what we conceive to be the method of training by which a higher type of womanhood may be developed, beginning with "The Little Girl," and considering in succeeding sections under the respective headings, "The Young Lady," "The Wife," and "The Mother," the several phases of woman's life.

The remainder of the work is devoted to the practical consideration of the various maladies to which women are subject. In this section it has not been the attempt of the author to furnish a substitute for the physician. We have, however, endeavored to make the instruction given so simple and untechnical, and so practical in character, as to enable any woman of ordinary intelligence to discover the beginnings of special ailments, and to manage successfully many of the diseases peculiar to the sex, when the services of a competent physician are not available.

There is probably no class of ailments which afford a more fertile field for the charlatan and the nostrum vendor, and it has been made one of the special aims of this work to render women sufficiently intelligent respecting the character of their ailments and the causes thereof to enable them to recognize promptly the true character of the medical pretender, and to escape the specious wiles of the nostrum vendor.

The reader's indulgence is craved for what he may discover as lacking in literary form or embellishment in the work. It has been written amid the distractions and anxieties incident to the care of a large hospital for chronic invalids and surgical cases, and almost every line is the product of midnight toil.

J. H. K.

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ANATOMY AND PHYSIOLOGY

OF

REPRODUCTION.



WHEN pursuing the study of "the human form divine," the anatomist or physiologist is often led to pause in the midst of his dissections or observations, and to exclaim with the Psalmist, "Great and wondrous are Thy works." Even the atheist, who recognizes no Omnipotent Hand as the Creator of all the marvels which greet the investigating scientist at every turn, is loth to believe himself to be a creature of chance, and is prone to erect an altar dedicated to the worship of Nature, even if he fails to recognize the God of Nature. That wonderful machine which we call the body is the masterpiece of the Infinite Artist. In every detail of fibre and structure and function, the most marvelous wisdom and foresight are displayed, and such an adaptation of means to ends as none but an infinite mind could devise. In no part of this wonderfully delicate and complicated mechanism is this

more strikingly to be observed than in that portion of the body devoted to the perpetuation of the species,—a function in the performance of which the interests of the individual are subjugated to those of the race. To the set of organs to which this important work is allotted in woman, and to the nature and peculiarities of their several functions, this section is to be devoted; but before entering upon the special consideration of the reproductive system, and as a preparation for the most perfect understanding of the subject, we will take a hasty glance at life and its functions in general, and at the structure of the body and its several parts, with their various functions.

Animated Atoms.—Let us begin at the very foot of the scale of animate being. Did you ever observe the filmy coat of green which covers the bottom of a half-dried pool by the roadside? or the greenish accumulation which occurs in old and uncleansed eaves-troughs? If so, gather a little of this same green substance and bring it to our laboratory where we will study it with care by the aid of a powerful microscope and learn a lesson in the science of life from the lowly forms which we may observe.

Everything being in readiness, we place beneath the microscope a little speck of the green slime, and find that the characteristic color of the same is due to the green coloring of the myriads of minute specks of life of which it is composed. The exact appearance of these under the microscope is well shown in Fig 1, Plate I, to which the reader's attention is invited. Each little speck is what is known to the biologist as

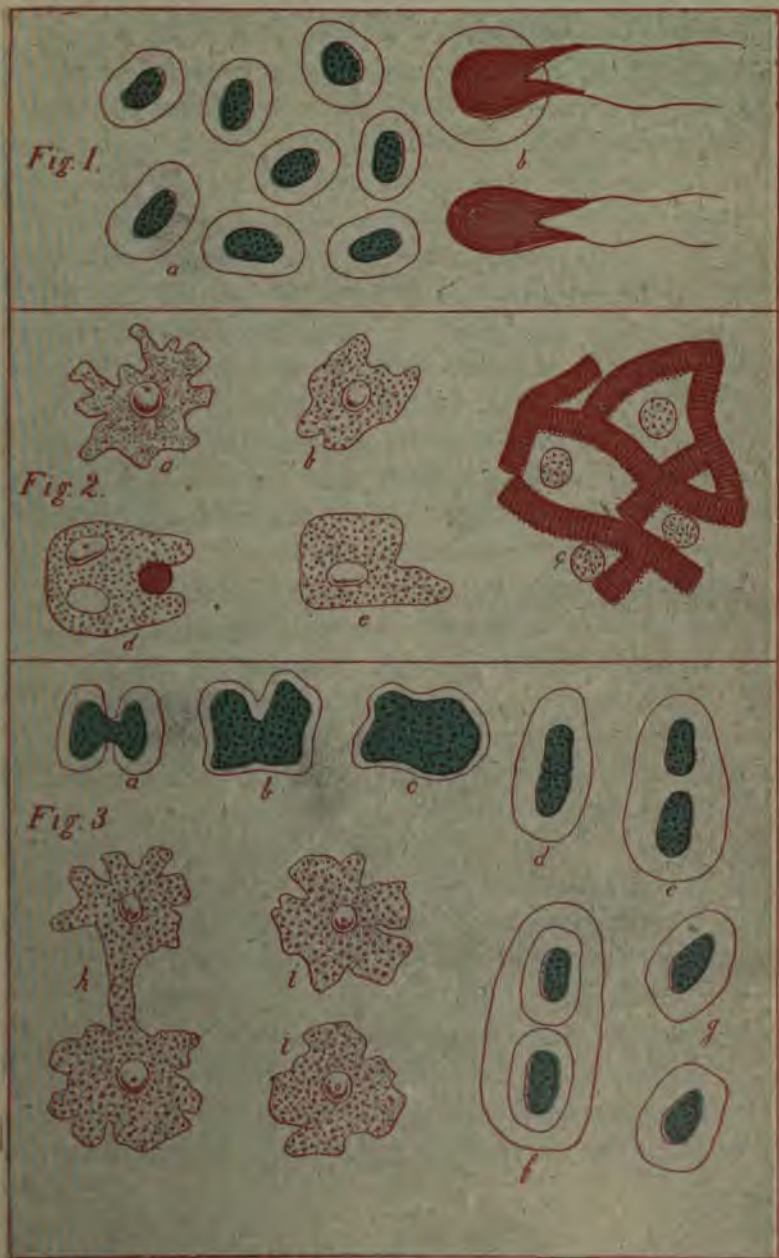


PLATE I.—LOW FORMS OF LIFE.

a cell. It is composed of a gelatinous substance of the consistence of jelly, transparent in all parts except its center, at which may be seen sundry little greenish specks to which the color of the aggregated mass is due. This humble creature, infinitesimal in size, is as much a living being as the proudest monarch, and bears the name of *protococcus*.

A little careful scrutiny of the object will probably reveal other forms of life closely allied to the species named, such as those shown at Fig. 2, Plate I, which are known as *amœbæ*, and which in many respects differ little from the *protococcus*. However, there is in reality a wide difference between these two animated specks, for one is a vegetable, and the other an animal. If we had the time at command, it would be most interesting to study closely the characteristics and habits of life of these two representative creatures; but we can only glance a moment at some of their leading points of interest.

1. They are more or less globular in form, in wide contrast with the sharp, angular outlines of a crystal of salt, a snowflake, or a minute grain of sand. This is true of all living bodies.

2. They eat. Although they are not possessed of teeth, or even of mouths, they may be observed to eat, each in its own way, and choosing its own proper food. The *protococcus*, our little green plant, subsists upon the minerals and gases which exist in the moist earth where it finds its home. A careful examination of the *amœba* suggests a reason why it is found in close proximity to its humble relative, since

it is found to contain within its central portion, sundry fragments which are evidently the remains of a protococcus upon which it has made a sumptuous meal.

3. They grow. As they absorb and appropriate nourishment, they increase in size, up to a certain limit, each passing through the several stages of existence peculiar to its species. In many of these lowly forms, as in some higher, some of the stages of the existence of a single individual involve such remarkable changes that it loses all semblance of its former appearance and would not be recognized as the same by the most acute observer. This is true of the protococcus, as will be seen by comparing the different forms shown in the plate.

4. They move about. The property of voluntary or spontaneous motion is usually associated with animals only; but this rule does not apply to the little creatures which are found at the lowermost end of the scale of animate existence. Here both animals and vegetables are endowed with the power of motion. The protococcus, at least at certain stages of its existence, possesses two little filaments by the constant motion of which it propels itself rapidly through the water when it is immersed, or wriggles along the face of a moist surface. The amoeba, our atomic animal, possesses still greater powers of motion and locomotion. It has no limbs, no feet, no hands, no wings, and yet it moves about with great facility, and sometimes after a very lively fashion.

5. They increase in numbers. These infinitesimal

beings, like the larger members of the animated world of which they are the types, possess the power of reproduction, by which their respective races may be preserved from extinction. Of the exact modes of reproduction here illustrated, we shall take occasion to speak elsewhere, and need not say more in this connection except to mention that they are essentially the same in each of the two little creatures which we are considering as representatives of the two great divisions of the organic world, animals and vegetables.

6. After living its allotted span of life and performing its due share of labor in the great workshop of the world, each of these two little creatures "pays its debt to nature" and returns to its mother earth whence, directly or indirectly, it came.

Are animals and vegetables then so nearly alike? The verdict of science is that the chief distinction which can be made between these two great classes in the lowest forms is in the character of the food upon which they subsist. The vegetable finds its food in the inanimate elements of the soil, moisture, and air. The animal cannot appropriate this kind of nourishment, and feeds upon the vegetables to which it is so near akin, or upon its brothers of the animal kingdom.

Slight as is the difference between the two classes, animals and vegetables, the difference between lowly vegetable forms and higher, and between the amoeba and higher animals, is still less. The giant oak is in reality only an aggregation of living cells each of which is essentially like the protococcus. The mammoth ele-

phant, man himself, is but a community of little creatures of which the amoeba is a type. Take a drop of blood from the finger; place it under the microscope, and we find in view thousands of little creatures, some of which are so nearly like the amoeba which we found in the slime from a stagnant pool that the most powerful microscope scarcely shows any difference (Fig. 2, Plate I). These little creatures are known as the white blood-corpuscles. Each drop of the vital fluid contains these and millions more of other little creatures known as the red blood-corpuscles, which are simply white blood-corpuscles grown old. Tear off a little bit of tissue from the liver and submit it to the scrutiny of a powerful magnifying glass. This too we find to be composed of curiously shaped little living creatures. These living atoms have each their particular individual work to do; the red corpuscles to carry oxygen, the white ones to repair injured portions of the body and in their old age to become red corpuscles, and the cells of the liver to make bile. In the kidneys are found other peculiar creatures to which is assigned the duty of removing from the body certain impurities which together form the urine. In the stomach are found creatures which are adapted to the work of making gastric juice to digest the food. Other cells in the body, devoted to mechanical work, form the muscles. In the brain and spinal cord are found still other active creatures which do our feeling and thinking for us. Thus the whole body is divided into groups of cells, each group being assigned a special work to do, just as the mem-

bers of a community might be grouped according to the several trades to which its members are devoted.

Having now gained a few fundamental ideas respecting the general make-up of the body, let us proceed to study its several parts with greater care, so that we may be better prepared to understand their relations to each other and to the whole. We will consider first,

THE NUTRITIVE SYSTEM.

All organized beings require a more or less constant supply of new material to promote the processes of growth and repair. In order to make this material, termed food, available for the purpose designed, a set of organs has been provided which are collectively known as

The Digestive Apparatus.—A quaint author described an animal as a stomach with various accessory organs for ministering to its wants. This remark presents in a somewhat exaggerated light the relative importance of the digestive apparatus if we consider the human animal alone; but if we are to regard the animal kingdom as a whole, it cannot be considered as very much overdrawn. By some mysterious alchemy, the exact nature of which is by no means well understood, the stomach reduces to a soluble form and a homogeneous character a great variety of substances which are used as human food, and which after absorption are by further processes still more marvelous and mysterious, converted into the various

tissues and elements which compose the body. The stomach and its accessory organs are the means by which fresh material is brought into the body to take the place of that which has become worn out and useless, and provides the necessary pabulum for the growth and development of the yet immature body. The digestive apparatus consists first, of

The Alimentary Canal, a muscular tube about thirty feet in length, extending from the mouth to the anus, along which are arranged the various accessory organs which take part in the process of digestion. At each end this canal is guarded by a sphincter muscle for the purpose of retaining its contents during the process of digestion. Beginning at the upper end, we will examine in detail each of the organs of digestion in the order in which they occur.

The Teeth, twenty in number in the child and thirty-two in the adult, are arranged in the upper and lower jaws, being equally divided between the two. Their function is to reduce the food to a pulverulent condition so that it may be easily swallowed and may be readily acted upon by the digestive juices. The maintenance of the health of the teeth requires their vigorous use in the mastication of food requiring trituration.

The Salivary Glands.—Arranged on either side of the mouth are three glands, the office of which is to secrete a bland fluid which moistens the food and softens it preparatory to the act of swallowing, and at the same time acts an important part in the chemistry of digestion, as we shall see presently.

The amount of salivary fluid secreted depends very largely upon the length of time the food is masticated, as its secretion is stimulated by the act of chewing.

The Œsophagus, or Meat-pipe.—The back part of the mouth is known as the *pharynx*, which contracts at its lower part to form a small tube which extends downward to the stomach and is known as the *œsophagus*. After the food has been masticated, it is thrown back into the pharynx by the tongue, and by a process of squeezing and pulling is carried down to the stomach.

The Stomach.—This organ, although one of the most important of the various organs engaged in the work of digestion, is not, as is generally supposed, the essential one. It performs only a part of the work of digestion, and may be dispensed with as easily as any one of a number of other organs which are associated with it in the perfect elaboration of the food. The stomach is simply a dilated portion of the alimentary canal, holding about three pints when moderately distended. Its lining membrane is filled with little glands which secrete a fluid known as gastric juice, which contains a peculiar substance known as pepsine, the properties of which we will discuss presently. The gastric juice is intensely acid, and is secreted in great abundance during the process of digestion.

The Intestines.—From the stomach downward, the alimentary canal continues as a small tube for the greater portion of its length, expanding about five feet from its termination to form the large intestine,

or colon, and again contracting a few inches from the end, forming the rectum, its terminal portion. All along its course, but especially in that portion known as the small intestine, this part of the alimentary canal is plentifully supplied with glands which secrete a complicated fluid which has an important part to play in the work of digestion. While the process of digestion is in progress, the intestines are in constant motion, wave-like motions, termed peristaltic movements, traversing their whole length, from the stomach downward, one following another with a sort of rhythmical action. Similar movements also take place in the stomach while that organ is engaged in the digestion of food.

The Liver.—This organ, the largest gland in the body, is located just beneath the ribs on the right side of the body. Its left portion projects over the stomach somewhat. The function of the liver is a complicated one. Besides its work of making bile, to which it may be said to be chiefly devoted, it also performs very important offices in the process of digestion, and other important functions which may be more properly mentioned elsewhere. The bile is conveyed from the liver to the intestine, which it enters a few inches below the stomach, by a duct, which is joined before it reaches the intestine by another duct coming from an organ close at hand which is also involved in the digestive process.

The Pancreas.—This is a gland in many respects closely allied to the salivary glands. The fluid which it secretes, the pancreatic juice, is a very

important digestive agent and very strongly resembles the salivary juice. It will receive further attention when we consider the digestive fluids.

The Spleen.—This organ is so closely associated with the digestive apparatus that it has been long surmised that it is in some way involved in the process of converting food into blood; but as yet, what part, if any, it acts, has not been made out. It is located in the left side, just under the lower border of the ribs. It is usually not large enough to be felt, but often becomes considerably enlarged in persons who reside in a malarious country, sometimes, as in a case which we have now under treatment, to ten or twelve times its natural size, which is scarcely larger than that of the closed hand.

The Portal System.—All the blood from that portion of the digestive system included in the abdominal cavity, is gathered into one large vein by which it is carried to the liver, a very wise provision of nature, since it necessitates that whatever is taken into the blood-vessels from the stomach must pass through this natural strainer before it can mingle with the blood of the rest of the body. This relation of the liver to the portal circulation is important, as it explains some cases of disease of other abdominal organs which would otherwise be inexplicable.

The Five Digestive Juices.—From the above description, it appears that there are five distinct digestive fluids; viz., the *saliva*, the *gastric juice*, the *bile*, the *pancreatic juice*, and the *intestinal juice*. Each of these several juices has its particular work to perform in the digestive process.

Food, in its relation to the digestive organs, may be divided into the following classes :—

1. *Nitrogenous* elements, represented by the albumen of eggs, the lean portion of flesh, and the gluten or vegetable albumen of plants ;

2. *Farinaceous* and *Saccharine* elements, represented by the various kinds of starch and sugar ;

3. *Oleaginous* elements, found in the various sorts of vegetable and animal fats ;

4. *Indigestible* and *Imnutritious* elements, as the cellulose of plants and the tendinous and indigestible portions of flesh food.

For each one of these classes, except the last, nature has provided a distinct digestive fluid.

The saliva digests starch, converting it into sugar. It also changes cane sugar into grape sugar.

The gastric juice digests albumen, caseine, gluten, and all other digestible nitrogenous elements, and does not digest any other of the elements of food.

The bile digests the fatty elements of the food, and no others. The digestion of fats consists in their conversion into an emulsion and the saponification of a small portion.

We have still two digestive fluids, the pancreatic and the intestinal, although we have found provision for the digestion of all the digestible elements of food. What use have we for them ? Here we see an illustration of the wonderful economy of nature. Lest any small portion of the food should escape without complete digestion, she has provided extra means for the digestion of the several elements of which our food is composed, as follows :—

The *Pancreatic Juice* possesses the remarkable property of being able to digest two of the elements of food, and those very dissimilar in character, the farinaceous and the oleaginous ; so that if there is any portion of the starch or sugar which escapes the action of the saliva, it may be acted upon by the pancreatic fluid ; and the fats not digested by the bile, still have a chance for digestion by the same agent.

The *Intestinal Juice* is a still more wonderful fluid, since it is able to digest all the elements of food. This remarkable property is undoubtedly due to the fact that it is the combined product of the action of a very large number of different glands, and so is undoubtedly very complicated in its composition.

Absorption.—After the food has been reduced to a fluid state by the action of these various juices, it is absorbed through two sets of absorbent vessels, and in some mysterious manner which is by no means well understood, is converted into blood, a sort of fluid tissue which circulates through the body for the purpose of conveying to the other tissues the required nourishment, and conveying away the worn-out material.

Disintegration and Elimination.—Every movement of a limb, every sensation, even every thought, results in the destruction or breaking down of tissue. The force employed in the various life-processes of the body is evolved at the expense of tissue. Even the act of digestion itself occasions the loss of a certain amount of tissue. This process is known as *disassimilation* or *disintegration*. The result of it is the formation in the body of certain substances known as

debris or *waste products* which are poisonous to the living tissues, and require prompt removal to preserve the body in health. When they are left to accumulate, various diseases arise, and death ensues, sometimes in a very short space of time.

To remove these useless and poisonous substances, a special set of organs is provided, which are termed *eliminative* or *excretory*. Each one of the principal poisonous elements formed in the body has its special organ to effect its removal. *Urea*, the poisonous product of the disassimilation of the muscles, is eliminated by the kidneys. *Cholesterine*, which results from the breaking down of nerve tissue, is carried out of the body through the liver. *Carbon di-oxide*, or *carbonic acid gas*, is eliminated by the lungs. Various poisonous elements are carried out by means of the skin, and still others by the intestinal mucous membrane. By the action of these several organs, the system is kept free from the waste matter which would otherwise accumulate to such an extent as to hinder the various vital processes, and in a short time obstruct them altogether.

Assimilation.—The breaking down and removal of waste products creates a demand for new material, which is supplied through digestion and assimilation. Each tissue possesses the power to repair itself, and this work is constantly going forward in all parts of the body, especially during sleep, when the process of disintegration is less rapid than at other times. Every tissue participates in this process of change, even the hardest bones. The soft tissues change very

often, probably every few weeks or months, while the more solid tissues probably change as often as every few years, if not more frequently. The blood, a fluid tissue, changes completely every few weeks.

THE MOTOR SYSTEM.

All of the voluntary and involuntary movements of the body are the result of the contraction of the minute fibres of the muscles, which constitute the fleshy portion of the body. The bones also participate in many of the bodily movements, particularly those of a voluntary character, by affording points for the attachment of the muscles.

THE NERVOUS SYSTEM.

In the brain and spinal cord, and to some extent in other parts of the body, there are to be found curious little cells, which vary greatly in size and shape, and are exceedingly minute, but which possess similar and very remarkable properties. When examined closely, it is found that these little creatures are provided with delicate prolongations of their substance, which may be compared to fingers, and which may be traced from the cells themselves to the most remote parts of the body in many instances, while in others they seem to be joined to other cells in the immediate vicinity. Some cells are furnished with a very large number of these fingers, while others have but one or two, or even none at all. Certain cells

send fingers to the eye, others to the ear, still others to the nose, others to the tongue, and others to the skin.

Thus it is that the various sensible properties of objects are perceived by the brain. Its cells are extended into the remotest parts of the body by means of their immensely long fingers, and thus are conscious of whatever is taking place at the surface or outside of the body. Similar fingers are sent out by other cells to the muscles, and muscular action is produced by impulses received from the cells in the brain or spinal cord. Other cells send out fingers to the stomach, and through their influence the work of digestion is performed. Still other cells have charge of the work of the liver in a similar manner. Thus all the work of the body is done through the influence of the little creatures which reside in the brain and spinal cord. By means of fingers sent out by other cells, all the various parts of the body are associated together in the closest sympathy. Every member sympathizes with every other member. When one suffers, all suffer.



THE REPRODUCTIVE SYSTEM.

ALL of the organs and systems of organs thus far considered, relate to the individual exclusively. Their object is the development and maintenance of the individual life. Reproduction has for its object the production of new individuals. This, so far as physiology teaches us anything on the subject, is its sole and entire function. It has reference to the race, not to the individual. Its exercise ought to be wholly unselfish in its object, though the human species, unlike the majority of lower animals, too often prostitute it to basely selfish purposes.

As this book is intended for one sex only, we shall in the consideration of the anatomy of reproduction, confine the description to the reproductive apparatus of the human female, although the consideration of the physiology of reproduction will require us to study to some extent the function in both sexes, and in lower animals.

The organs of reproduction in both sexes may be divided into two classes,—*essential* and *accessory*. The essential organs are those which produce the reproductive elements known as the *zoöperm* or *spermatozoa* in the man, and the *ovum* in the female, the former being produced by the essential organ of reproduction of the male known as the *testicle*, and the latter by the *ovary*, the essential reproductive organ of the female. The other organs concerned in reproduc-

tion in the female are chiefly for the purpose of protecting the young human being during its development. The concise description of the various organs involved in the process of reproduction which we shall attempt to give, will be best understood by reference to Plate A, which represents the middle portion of the body as divided vertically through the center.

Beginning with the most external portion of the reproductive apparatus, we find, first, two fleshy folds known as the *labia*, which unite in front at a prominence known as the *mons veneris*, which, with the *labia*, is in the adult covered with a thick growth of hair. A vertical slit separates the labia, a short distance from the lower or posterior end of which is the *anus*, or circular opening of the lower end of the alimentary canal, or intestine.

Just within the labia are two smaller folds of tissue known as the *labia minora*, which unite at the upper end, forming a sort of sheath, beneath which is the *clitoris*, which corresponds to the *penis* of the male. The clitoris is composed of erectile material, which is also true of the *labia minora*. Both of these parts are abundantly supplied with nerves of sensibility, and together they constitute the chief seat of sensation in the sexual act.

Just below the clitoris is a small opening known as the *meatus urinarius*, the external orifice of the *urethra*, a small passage connected at its inner end with the bladder, and serving as a means of out-let for the urinary secretion.

A short distance below the *meatus urinarius* is an-

brane, and, as is the case with the uterus also, their lining membrane is covered with ciliated epithelium; but instead of moving inward, the motion of the cilia in the tubes is toward their outward extremity which communicates with the uterus, the object of which is to carry the ovum toward the cavity of the uterus, as will be presently seen.

On either side of the uterus and near its central portion are located the essential organs of reproduction, the *ovaries*. Each ovary is about one and one-half inches in length, and is placed horizontally, as shown on Plate VI. The ovary is held in position and connected to the uterus by a broad fold of membrane known as the broad ligament, which also supports along its upper border the Fallopian tube, the outer extremity of which curves downward and terminates near the ovary. Each ovary is also joined by its inner end to the upper angle of the uterus by a small twisted cord known as the ligament of the ovary. When the ovary is cut in two, as shown on Plate IX, and examined by means of a microscope, it is found to be filled, especially near its outer border, with small cells, which are undeveloped or unripe ova, destined to be matured and cast off one at a time at each menstrual period during the life of the individual, some, under favorable circumstances, to be developed into human beings.

The Bladder.—The bladder in females is located in front of the uterus, and is somewhat larger than in the male, its measurement from side to side being greater than from before backward. The urine is dis-

charged from the bladder through a canal about one-fourth inch in diameter, known as the *urethra*, the opening in which is just above the upper edge of the vagina.

The Rectum.—This portion of the alimentary canal, its inferior terminus, lies behind the uterus and the vagina in the hollow of the sacrum, its lower end being guarded by a circular muscle known as the *sphincter ani*. Between the lower part of the rectum and the vagina is placed a wedge-shaped body, the broad base of which occupies the space between the anus and the vaginal opening. This structure is known as the *perineum*. It is a muscular structure, but is possessed of considerable solidity, and plays a most important part in maintaining the internal organs in proper position. It is sometimes ruptured in parturition, giving rise to serious disease, as elsewhere shown.

Blood Supply of the Uterus and Ovaries.—The blood supply of these associated organs is chiefly derived from the same source, the uterine and ovarian arteries connecting in such a way as to make the circulation of the ovary and the uterus practically the same. The blood-vessels of the uterus are distributed through its substance in such a way as very readily to give rise to passive congestion, being very tortuous, and venous obstruction occurring very easily. This accounts for the great readiness with which the organ becomes subject to diseases of various sorts due to passive congestion.

Nerves of the Uterus and Ovaries.—The nervous supply of the uterus and ovaries, as well as of the other internal organs of generation, is chiefly derived from the organic or sympathetic system of nerves, very few sensory nerves being found in their substance. This accounts for the very great degree of insensibility to pain characteristic of these organs in a state of health. The nervous supply of the ovaries, uterus, and vagina, is still more closely associated than the blood-vessels of these organs, nearly all the nerve-branches being derived from the same source; which accounts for the very close nervous connection which is observed in both health and disease, but particularly in the latter condition. The nerves supplying the uterus and ovaries are chiefly derived from the nerve-centers of the lower part of the spine, which also send branches to the external tissues lying in their vicinity, which undoubtedly accounts for the great prominence of pain in this region as a symptom of uterine disease.

Supports of the Uterus.—The womb is held in place by a variety of forces brought to bear on it. In a state of health and when unimpregnated, the uterus weighs scarcely more than an ounce and a quarter, so that little force is required to retain it in position. Nevertheless, ample means are supplied to keep it in its proper place, such as are sufficient when there is no departure from the conditions upon which depends the maintenance of these organs in a state of health. The uterus is connected with the adjacent organs by six ligaments. Two connect its posterior

surface with the rectum; two other ligaments connect it anteriorly with the posterior wall of the bladder; while its sides are connected with the sides of the pelvis by means of two broad folds of tissue known as the *broad ligaments*. These ligaments are not composed of fibrous tissue as are ligaments in other parts of the body, but are simply folds of the serous membrane lining the abdominal cavity, known as the *peritoneum*. They are not muscular in character, and so do not possess the power of contraction, though they sometimes become contracted as the result of disease.

The broad ligaments, with the uterus, divide the pelvic cavity into two portions. The anterior part contains the vagina, bladder, and the anterior half of the uterus, while the posterior portion contains the rectum and the posterior half of the womb. The ovaries, as before described, are located in the broad ligaments which form this septum. These bands of tissue undoubtedly play an important part in maintaining the uterus in position, and yet they are so placed that they cannot prevent the organ from settling down into the cavity of the pelvis, or changing its position in various other ways, when any degree of force calculated to displace it is brought to bear upon it.

The maintenance of this organ in its proper place is undoubtedly chiefly due to other means than the ligaments just described. Probably the most efficient of these is the support of contiguous organs,—the rectum, bladder, and portions of the small intestine

which lie closely about the uterus,—and the perineum, the wedge-shaped body occupying the space between the lower portion of the vagina and the rectum. The latter organ must be regarded as the chief means by which the descent of the uterus is prevented when the trunk of the body is in a perpendicular position. The perineum is located some distance below the uterus, and is connected with the latter organ only through the vagina; but the vaginal walls possess sufficient firmness when in a healthy state, to act efficiently as a prop for the womb attached to their upper extremity. The efficiency of the vagina as a support for the uterus by the aid of the perineum, is greatly increased by the concavity of its posterior wall, which will be observed by reference to Plate A, being supported behind by the rectum, in front by the bladder, and below by the perineum. The vagina is an efficient means of maintaining the uterus in position so long as its walls retain their proper “tonicity” or firmness.

The muscular walls of the abdomen must also be regarded as an efficient means of supporting the uterus and ovaries in position, acting indirectly through the intestinal viscera. The uterus and ovaries lying in close contact with the organs which occupy the lower portion of the abdomen and the upper part of the pelvis, are supported by them so long as the intestines and neighboring organs are held in position by the abdominal walls. When the muscles of the abdomen lose their tone, so that they no longer support the contents of the abdominal cavity, and allow

them to drop down into the pelvis, the uterus and ovaries will be crowded out of position in spite of the support which they receive from several ligaments, the vagina, and the perineum. It is probable, also, that the pyriform shape of the uterus aids in keeping it in position, the adjacent organs being packed around its lower portion in such a way as to sustain it. This is evidenced by the fact that its position varies with that of the bladder and rectum. When these cavities are both distended, the organ lies higher than when they are empty. When the bladder is empty and the rectum distended, it is tilted over toward the former, and vice versa. The last named means of support for the uterus has been too often overlooked, and, as we shall hereafter show, this oversight has given rise to injurious and unsuccessful methods of treating uterine displacements.

The Pelvis.—This is a cavity formed by the union of several bones, the *ossa innominata* forming the two sides, and the wedge-shaped *sacrum* and *coccyx* the posterior portion. Four joints are formed: one by the union of the *ossa innominata*,—the *symphysis pubis*; two at the points of union between the *ossa innominata* and the *sacrum*: and the fourth by the junction of the *coccyx* with the lower end of the *sacrum*. These joints are not flexible joints like those of the fingers, elbows, or most other joints of the body, but are almost immovable under ordinary circumstances, the bones being held together by strong ligaments. In advanced age they often become solid; in fact, this change may occur in males in early life.

The form of the pelvis will be best seen by referring to Plate II. We would call especial attention to the expanded lateral portion of the pelvis, formed by the broad iliac bones, the space between which is known as the *false pelvis*, and to the opening through the pelvis, forming quite an essential cavity, known as the *true pelvis*. The line separating the false and the true pelvis is known as the brim of the true pelvis, a term often used in midwifery, the significance of which ought to be understood on that account. Just opposite the symphysis pubis is a prominent point also of especial interest in this connection, known as the promontory of the sacrum, formed by the upper portion of the sacrum, which projects into the true pelvis, lessening its diameter from before backward. Upon the greater or less prominence of this promontory depends, to a great degree, the ease or difficulty with which childbirth may take place. Attention should also be called to the arch formed beneath the symphysis pubis by the divergence of the lower portions of the ossa innominata, which support the weight of the body in sitting. This arch, with the space between the lower part of the symphysis pubis and the coccyx, forms the outlet of the pelvis.

Differences between the Male and the Female Pelvis.—There are several important differences between the pelvis in males and females which should here receive attention, which will be best understood by referring to Figs. 1 and 2, Plate II.

These may be enumerated as follows:—

1. The bones of the female pelvis are more slen-

der than those of males, and present smoother surfaces.

2. The female pelvis is much wider than that of the male, the distance between the extreme points of the ossa innominata being proportionately much greater than in the male pelvis.

3. The true pelvis is very much larger than in the male; and the distance between the brim and the outlet proportionately less, which is due to the fact that the sacrum is shorter and the arch beneath the pubis much wider than in the male.

4. The sacrum in the female pelvis is much less curved than in the male pelvis, so that the canal of the pelvis is much straighter in the female than in the male pelvis.

Some of the differences above noted are made more apparent by the comparative views of the male and female pelvis given in Figs. 1 and 2, Plate II. It will also be observable that the prominent points on the interior surface of the pelvis project into its cavity to a much greater distance in the male pelvis than in the female.

Some of the above mentioned peculiarities of the female pelvis, particularly the greater divergence of the large bones of the pelvis, give to the female figure its chief characteristics. The ancient Greeks, in their models of female beauty, made the measurement across the hips one-third greater than across the shoulders, reversing these measurements in their representation of male beauty in Apollo. It is this great breadth across the hips which occasions the swinging

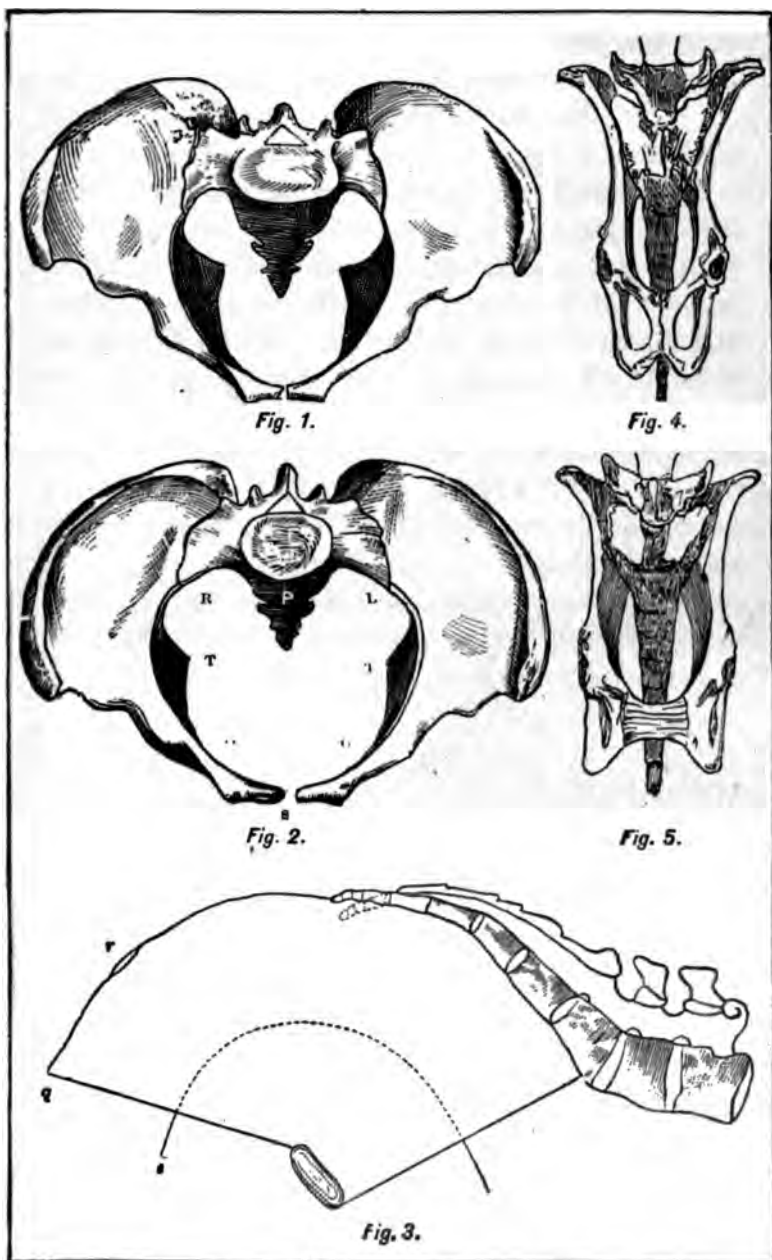


PLATE II.

gait in females in whom the size of the pelvis is unusually prominent. The greater the width, the more marked will be the peculiarity of the gait.

Canal of the Pelvis.—The space between the brim of the pelvis and its outlet constitutes what is known as the cavity or canal of the pelvis. The outlet is very irregular and incomplete in its bony outline, but is rounded and completed by the soft parts. When thus completed, its proportionate length and direction is about as represented in Fig. 3, Plate II. The strongly curved character of the canal will be at once noticed; also the fact that the symphysis pubis, located at the point marked S in Fig. 2, is almost directly under the promontory of the sacrum, P. It will thus be seen that the brim or inlet of the pelvic cavity looks almost directly backward when the person is standing erect, while the outlet of the pelvis looks forward. This peculiar arrangement is characteristic of the human pelvis, and is designed to give to the contents of the abdominal cavity the proper support while the body is in the erect posture peculiar to human beings. In the lower animals the canal of the pelvis is almost straight; which is wholly compatible with the prone position natural to all the lower orders of animals.

Measurements of the Pelvis.—The principal measurements of the pelvis are as follows: from the upper edge of the symphysis pubis to the promontory of the sacrum, four and one-half inches; transversely across from T to T, as shown in Fig. 2, Plate II, five and one-fourth inches; obliquely across from O to L or O to R, five inches. These dimensions are those

obtained by measuring the cavity at the brim. It is found that measurements vary considerably at different portions of the canal. At the middle portion of the pelvic cavity the oblique diameter is more than five and one-fourth inches, while the transverse measurement is only five inches, or one-fourth inch less than at the brim. At the outlet, the transverse measurement is only four and one-fourth inches, or one-fourth inch less than at the brim of the pelvis, and the oblique four and three-fourths inches, or one-fourth inch less than at the brim, and one-half inch less than at the middle of the cavity; while the antero-posterior diameter is five inches, or six when the coccyx is forced back, as it is during the last stage of childbirth. It thus appears that at the brim the transverse diameter is the greatest, at the middle of the cavity the oblique diameter, and at the outlet the antero-posterior. This relation of the different measurements of the pelvis gives rise to the change in the position of the head of the child during childbirth, known as rotation, which will be more fully explained hereafter.

The remarkable curve of the pelvic cavity and the peculiar relation of its several diameters make the act of childbirth in the human female much more complicated and difficult than in the females of the lower animals, in whom the canal is usually straight, although in some instances, as in the cow and the guinea-pig, it is much too narrow to admit of the passage of the young animal. In these cases, however, a remarkable change takes place during the few weeks prior to the termination of pregnancy. In the guinea-

pig, the ligaments which unite the ossa innominata at the symphysis pubis become greatly relaxed, so that the cavity can be greatly enlarged during parturition by the separation of the ends of the bones. This is well shown in Figs. 4 and 5, Plate II. In the cow the same thing takes place at the junctions of the ossa innominata with the sacrum, allowing the bones to be separated at these points to such a degree as to greatly enlarge the pelvic cavity. After parturition, the ligaments in both animals very quickly shorten again, so that the bones return to their normal relation with each other.

A change somewhat similar to that described above takes place in the human female prior to childbirth. Numerous observations have shown that the change which occurs is almost identical with that which takes place in the pelvis of the cow, and occasional instances are known in which the change noted as taking place in the guinea-pig has occurred in the human female. A few years ago, a case of this sort came under our observation, in which the separation of the ossa innominata at the pubis was so great that the bones did not return to their normal position again, but remained movable, giving rise to a considerable degree of motion, which was accompanied by a grating sound whenever the patient exercised upon her feet.

Another interesting fact which should be mentioned in this connection as having an important bearing on the size of the pelvic cavity, is the fact that the several parts of the pelvis sustain different relations to each other in different positions of the body.

When the body is in a standing, sitting, or lying position, the promontory of the sacrum recedes somewhat, making the brim or inlet of the true pelvis larger than when the body is in other positions. When the body is bent forward upon the thighs, the symphysis is tilted forward by the contraction of the abdominal muscles, thus diminishing the size of the brim and enlarging the outlet. This accounts for the positions naturally taken by women during the different stages of childbirth. At the beginning a sitting, standing, or lying position is preferred, while during the later stages, the body is bent forward, or the limbs drawn up.

The Breasts, or Mammary Glands.—These organs are so closely associated with the organs of generation in the female that a description of the latter would not be complete without including at least a general account of the former. The breast is situated between the third and sixth or seventh ribs, and extends from the sternum to the axilla. The left breast is usually a little larger than the right. In the center of the breast is located the nipple, which is of a rose-pink color in a woman who has not borne children, and is surrounded by a ring of tissue somewhat different from the surrounding skin, and of the same color as the nipple. Upon the surface of this ring several little tubercular projections may be seen, at the top of which may be observed, upon close inspection, a number of little openings, which are the orifices of small glands producing an oily secretion which protects the nipple. These minute structures are mentioned on account of the peculiar changes

which occur in them during pregnancy. The nipple is very liberally supplied with blood-vessels and involuntary muscular fibres, and is exceedingly sensitive. Upon being irritated, the nipple becomes charged with blood, undergoing erection, and a slightly pleasurable sensation is produced. The great bulk of the breast consists of fatty or adipose tissue, underneath which is placed the glandular and essential portion of the breast, which consists of a large number of lobes and lobules, as shown in the lower part of Fig. 1, Plate VIII. Each lobule is divided into still smaller lobules, in the interior of which are found a large number of cells, by which the milk secretion is produced. Each lobule communicates with a small duct, which joins with other ducts, and thus forms a larger canal, which in turn unites with other canals of the same character, forming still larger ducts, some fifteen or twenty in number; all of these converge toward the nipple, near which they become considerably dilated, forming reservoirs, in which the milk collects. At the base of the nipple, the ducts are reduced to a small size again, and are continued up through the nipple without uniting together, each opening at the surface by a separate orifice. The milk-ducts and reservoirs contain a large number of muscular fibres in their walls, which are capable of contracting and thus diminishing the size of the tubes. Irritation of the nipple, either by the mouth of the child or otherwise, causes dilation of the openings of the ducts, and at the same time a contraction of the walls of the ducts within the glands, by which

double action the milk is made to flow freely. This action is sometimes reproduced by emotional excitement of any kind, so that the milk is expelled involuntarily and lost. It sometimes happens that irritation of one gland will cause expulsion of milk from the other, so that nursing the child at one breast will occasion a loss of the secretion at the other.

Lymphatic vessels are very abundant in the breast, by which the watery portion of the milk may be absorbed. The action of the lymphatics may be increased by friction, which furnishes an excellent means of lessening the milk secretion when necessary.

The mammary gland is a peculiar modification of the sebaceous or oil glands, which are very abundant in the skin. It is present in all animals which have warm blood and bring forth their young alive. These animals are known as mammals, in consequence of their possession of *mammæ*. A very interesting study in natural history is the peculiar arrangement and location of the mammary glands in different animals. In one animal known as the "duck-bill," a native of Australia, the mammary gland consists simply of a flat surface not covered by hair, which presents numerous little openings for the milk-ducts. In some animals the breast is a cavity or depression in the surface rather than a prominence. In one very curious class of animals known as marsupials, to which belong the kangaroo and opossum, the breasts consist simply of nipples, which are inclosed in a pouch, into which the young are placed after their birth, each young one becoming attached to a nipple,

to which it clings until it is developed; when it undergoes a sort of second birth. The young of these animals are very imperfectly developed when first born. In bats, the breasts consist of a single pair, which are placed upon the chest in the same position as in human beings. In whales, the breasts are located very close to the vulva. In dogs and pigs, the breasts are arranged in a double row extending nearly the whole length of the body.

Certain anomalies and irregularities sometimes occur in the formation of the breasts, which are not uninteresting. Cases are sometimes met in which there are two or three nipples on one gland. In some instances, there are more than two breasts. Usually the extra breast or breasts are located near the ordinary position, but sometimes they are found on distant parts of the body, as the back or thigh, or in the axilla.

In the male, the breast is usually only rudimentary, but cases are on record in which the gland has been abnormally developed in the male to such an extent as to produce an abundant supply of milk. A case is reported in which a colored man acted as wet-nurse in the family of his master for many years.

The secretion of milk in the female breast is not usually formed until toward the termination of pregnancy, but by a long continued process of manipulation and stimulation, the gland may be made to produce milk freely in virgins. In some countries, wet-nurses are systematically produced in this way. The curious fact has been observed that milk is some-

times secreted by the mammary gland in very young infants, the secretion usually commencing at birth or two or three days afterward, and continuing for two or three weeks. Usually only two or three drops can be pressed out of the nipple at one time, but occasionally the amount of fluid is increased to one or two drachms. This anomalous secretion of milk is observed with equal frequency in both sexes.

Before pregnancy, the breast, when fully developed, is hemispherical in form, and possessed of considerable firmness, but after nursing, during which time the breast is considerably enlarged, the tissues become somewhat softer and flabby or pendulous.

THE REPRODUCTIVE FUNCTIONS.

Wonderful as they are in their anatomical structure, the reproductive organs are still more remarkable in the functions which they are designed to perform. To them is allotted the important work of producing new individuals, and thus perpetuating the race. They enable man to become in a certain sense a creator. Their function may be regarded as the highest of that of any of the organs of the body, if we except the brain, the organ of thought and feeling. Although their office relates particularly to new beings, rather than to the individual, their association with the other organs of the body is so intimate that any derangement of function is quickly followed by disease of other parts, as we shall have occasion to show more fully hereafter. Their functions

are also largely controlled by the varying conditions of the body which affect the functions of other organs, sometimes being suspended, sometimes exaggerated, by influences which may similarly affect other organs.

A fact of importance which it is well to understand, is that the sexual function, being the least concerned in the maintenance of individual life, is more likely to be suspended than other functions, when through lack of nutrition, wasting disease, or any other depressing cause, the vital forces of the body are impaired. This fact accounts for the cessation of menstruation in connection with tubercular disease, anæmic conditions of the body resulting from hemorrhage or otherwise, and other morbid states in which the vitality is at a low ebb, instances of which are frequently observed. We have mentioned this fact in this connection for the purpose of correcting the popular notion that the suspension of menstruation, one of the leading sexual functions in woman, is in these cases the cause of the other morbid conditions with which the disease is associated; whereas, as just explained, it is simply a result, and is of no greater significance than other symptoms growing out of the fundamental morbid condition under which the system may be suffering.

Notwithstanding the immense amount of study and research which has been bestowed on the sexual function in man as well as animals, there is still much mystery connected with the subject. Nature has not yet allowed inquisitive man, even when aided by the most powerful microscope and other instruments of

investigation which he has invented, to fathom all the secrets connected with the marvelous process by which new beings are created. Nevertheless a sufficient amount of knowledge has been developed to render this subject exceedingly interesting, and to disperse to a large extent the mists of ignorance by which it has been surrounded from the earliest times down to the present. We shall not attempt to present in the brief space devoted to this part of the subject, all that is known respecting the functions of the reproductive organs, but only some of the more salient points, and such as have some relation to the practical information to which the greater portion of this work is devoted.

In order to make more clear and comprehensible the nature of the function in human beings, we have introduced a few illustrative facts respecting the function in the various lower orders of animals. By these and other means, we have endeavored to so simplify this intricate subject as to bring it within the understanding of all who are sufficiently mature in mind to be capable of comprehending it and profiting by the instruction given in this work.

Ovulation.—A microscopical examination of the fully developed ovary shows that its interior is chiefly made up of an almost infinite number of little sacs, each one of which contains a small cell as shown in Fig. 3, Plate IX. This is true of the ovaries of all species of higher animals. When the female of any species of animal attains a certain stage of development, these cells begin to work toward the surface of the

ovary. One by one they approach the outer surface of the organ, together with the little sac in which each is contained, which increases gradually in size during its approach toward the surface, and finally, when the surface of the ovary is reached, becomes distended to many times its former size, by the accumulation of serum within its cavity. The little cell in the meantime becomes attached to that portion of the sac nearest the surface of the ovary.

By and by the distension of the sac becomes so great that it can no longer retain its contents, when it ruptures with considerable violence, thus allowing the escape of its fluid contents, which sweep along with them the little cell for the development of which this curious arrangement was designed. The final act in the process which we have just described, has been well shown by the artist in Fig. 4, Plate IX. The little cell which is thus forcibly ejected from the ovary by the process just described, is really an egg, composed of a delicate membrane inclosing a yolk.

Viviparous and Oviparous Animals.—Up to very nearly the present time it has been supposed that a radical difference existed in the mode of development of viviparous and oviparous animals, or those which bring forth their young alive, and those which produce eggs to be afterward hatched outside the body. Modern researches, however, have shown that no such radical difference exists, but that the young of all higher animals, including those which bring forth their young alive, are really produced from eggs, the only difference being in the manner in which these eggs are developed.

Procreation a Budding Process.—The affinity between man and the lower orders extends still further down the scale of animate existence. The student of biology is familiar with the fact that in certain low orders of animals, as, for instance, the *hydroids*, the multiplication of the species takes place by a kind of budding. The hydroid is a sort of animated shrub of jelly-like consistence. It is usually found growing attached to rocks and various solid or stationary bodies, in little communities. From the parent stems little buds grow out, some of which after a time break off and swim away as independent little jelly-fishes. These, in turn, become attached to a submerged rock or an aquatic plant, and after becoming fully developed, give rise to other buds, thus perpetuating the species. This is a process of external budding, but in other species of lower animals the same process takes place on the interior of the parent animal. This is the case, for example, with the *distoma*, or “*fluke*,” a parasitic creature one species of which makes its home in the human liver. In one stage of its existence, this little animal consists of a long yellow sac, looking like a yellow worm. From the interior of this sac little buds arise, which become developed into new beings, and these, in time, come to resemble their parent, and perpetuate the same curious process.

This same budding process actually takes place in human beings, the little cell or egg ejected from the ovary being in fact nothing more nor less than an interior bud produced in that organ and separated by a

process not very different from that by which the little buds of the *polyp* or the distoma are separated from the parent. The chief difference between the budding process in human beings and in the lower orders referred to, is that in the case of the former the little bud separated from one parent cannot develop into a perfect human being without uniting with a similar bud from another individual of the opposite sex.

Ovulation Periodic.—The above described budding process or casting off of an egg or ovum does not take place continually, but occurs periodically. This is true of all classes of higher animals as well as of the human female. The length of the interval between the periodical repetitions of this process varies in different individuals and different classes of animals. In the human female the ovum is matured once every four weeks, or in twenty-eight to thirty days, a period corresponding very nearly to the lunar month. In the horse, cow, rabbit, and numerous other animals, the period is very much shorter. Completion of the development of the ovum and rupture of the vesicle containing it, is hastened by sexual congress.

Menstruation.—In connection with the maturation and casting off of the ovum, various other changes take place in the sexual organs which are accompanied by a greater or less disturbance of the whole system. In the lower animals this is termed the “œstrus,” “heat,” or “rut.” At this period in lower animals there is usually a considerable degree of congestion of the whole generative apparatus; the secretions of

the vagina and the neighboring parts are greatly increased in quantity and somewhat changed in quality. In the female dog the mucous membrane of the vagina becomes very red and somewhat swollen, and produces an abundant secretion slightly tinged with blood. This secretion also produces at this time a peculiar odor, which attracts the attention and appears to stimulate the passions of the male animal. The same condition is observed in the rabbit, and in certain species of apes the congestion involves not only the sexual organs themselves, but extends to the neighboring parts, involving the skin of the buttocks and thighs and the under part of the tail. The general system of the animal is also affected very considerably. For example, the cow, on the near approach of the oestral period usually loses her appetite and becomes very restless. If feeding in a field, she will frequently suddenly stop grazing, and run rapidly from one side of the field to the other, looking about in a startled, uneasy manner, and presenting every evidence of peculiar excitement. This condition continues for two or three days, when the animal returns to her natural condition again.

A fact of significance which may be mentioned here is that the female of these animals will not allow the approach of the male except during or just after the oestral period, which careful observation has shown to be the only time when sexual contact is likely to be fruitful. The bearing of this important fact will be referred to elsewhere.

In the human female, ovulation is accompanied by

changes very similar to those which occur in lower animals as just described. The following is a description of the changes which occur as given by Dalton:—

“The menstrual discharge consists of mucus mingled with blood. When the period is about to come on; the female is affected with a certain degree of discomfort and lassitude, a sense of weight in the pelvis, and more or less disinclination to society. These symptoms in some instances are slightly pronounced, in others more troublesome. An unusual discharge of vaginal mucus then begins to take place, soon becoming yellowish or rusty-brown in color, from the admixture of a certain proportion of blood; and by the second or third day, the discharge has the appearance of nearly pure blood. The unpleasant sensations, at first manifest, then usually subside; and the discharge, after continuing for two or three days longer, grows more scanty, its color changing from red to a rusty or brownish tinge until it finally disappears, and the period comes to an end.

“The menstrual epochs of the human female correspond with the periods of oestruation in the lower animals. Their general resemblance to these periods is very evident. Like them, they are absent in the immature female, and begin to take place only at the period of puberty, when the aptitude for impregnation commences. Like them, they recur during the child-bearing period at regular intervals, and are liable to the same interruption by pregnancy. Finally, their disappearance corresponds with the cessation of fertility.

“The period of œstruation in many of the lower animals is accompanied with an unusual discharge from the generative passages, frequently more or less tinged with blood. In the human female, the bloody discharge, though more abundant than in other instances, differs only in degree from that in many species of animals.”

During menstruation, the uterus and ovaries are considerably increased in size by the physiological congestion to which they are subjected. This naturally gives rise, in most cases, to an increased activity of the reproductive instinct, as in lower animals. The nature of the menstrual flow has been the subject of much speculation. As before stated, it consists of the natural secretions of the vagina and uterus, which are greatly augmented in quantity, mingled with more or less blood, in many cases consisting chiefly of blood. When present only in a normal quantity, it has been observed that menstrual blood does not coagulate. This fact has led to the supposition that the blood of the menstrual discharge is different from that of the body in general; but very careful investigation of the matter shows that this peculiarity of menstrual blood is the result of its mixture with the acid secretions of the vagina, by which its coagulation is prevented. This view is sustained by the fact that when the blood is present in large quantity it does coagulate, just as when discharged from any other part of the body.

Whether or not the menstrual discharge is to any degree an excretion, is a question not yet well settled;

but it is perhaps probable that the secretion of the utricular glands, which are found very abundant in the lining of the cavity of the uterus, is to some extent at least, an excretory product. The serious disturbances of the general system which are occasioned by a sudden suppression of the menstrual flow, support this idea. Further support of the same notion is given by the fact that the secretion of urea by the kidneys is diminished fully one-fifth during menstruation. It is not to be supposed, however, that the menstrual discharge possesses anything of the extremely noxious character attributed to it by the ancients, who supposed it to possess the power to blight everything with which it came in contact, even vegetation being said to wither and droop within a few hours after being exposed to its influence.

The length of time that the flow continues varies considerably in different individuals. In some women the flow is present only one or two days, while in others it continues from five to eight days without any apparent injury to health. The average is probably about four days. The amount of the discharge has been variously estimated, some placing it at three or four ounces, and others as high as seventeen ounces, or more. It is probable that the smaller estimate is about the average amount in healthy females. It has been observed that the flow is more abundant in women of indolent or sedentary habits than in those accustomed to active labor; also in persons of feeble constitution than those of robust health. It is also stated that the average amount of the dis-

charge is greater in women residing in cities than in those who reside in the country or in country villages.

The origin of the blood is the interior of the uterus, from the walls of which it exudes very much like perspiration from the surface of the body. For several days previous to the occurrence of the discharge, the mucous membrane of the uterus has been found to undergo peculiar changes, increasing to several times its usual thickness, and undergoing a sort of fatty degeneration, by which the walls of the capillaries are weakened to such an extent as to allow the passage of the blood through them. This change in the character of the mucous membrane of the uterus is undoubtedly a sort of preparation for the reception of the ovum, which is becoming matured at the same time, preparatory to its passage into the uterus.

A considerable portion of the menstrual discharge consists of epithelium which has been softened and exfoliated. Sometimes the epithelium is thrown off in the form of large patches, which frequently have the appearance and consistency of membrane, and which is occasionally so extensive as to present a cast of the inside of the uterus. This has led to the erroneous belief that the mucous membrane of the uterus is actually thrown off at each menstrual period. This is not so, however, even in cases of what is known as *membranous dysmenorrhœa*, in which what appears to be the mucous lining of the uterus is simply a false membrane somewhat similar to the membranous formation in croup.

The ancients held many very singular notions respecting the function of menstruation, among which was the idea that the moon exerted a powerful influence over this function. This notion has retained its hold on the popular mind more or less even to the present time. It has in fact been so firmly held by some, that an eminent French astronomer a few years ago thought it worth his while to devote several years to a careful study of the subject. After making several thousand observations, he stated as the result of his study that no relation whatever could be traced between the menstrual function in women and the phases of the moon.

Vicarious Menstruation.—In some cases in which the regular menstrual flow is suppressed or absent, the discharge of blood takes place from some other part of the body, as from the nose and lungs or stomach and bowels, or even from the surface. This discharge has been termed vicarious menstruation. The flow of blood which occurs in these cases cannot be considered as a natural menstrual discharge. The condition is one of disease, and will be considered elsewhere.

Fecundation.—The process by which the male and female elements of generation are united to form the embryo of the new individual, is termed fecundation. This is a process of so great interest from a physiological stand-point that it will be well worth while to consider it at some length, studying the mode in which it takes place in lower forms of life, and lower animals, as well as in human beings. At

the lower limit of the scale of life, are found numerous species of plants and animals which consist of a single cell. Although, in some of the simpler forms, the different individuals of the same species are to all appearance exactly alike, there being no physical characteristics by which to distinguish the sexes, there is evidence for believing that the property of sex is possessed by these minute creatures, since it has been observed that reproduction does not take place without the occurrence of a process essentially the same as that of fecundation in higher animals. In the case of these lower forms, however, the process of fecundation involves the whole individual, rather than a minute element produced by either sex. In studying this process, a male and a female cell, both so nearly alike that no distinguishing features can be discovered by the most powerful microscope, may be seen to approach each other, and soon after coming in contact, to become so completely united as to form one homogeneous cell. Soon after this takes place, the one individual thus formed begins to subdivide, first separating into two halves, each half again subdividing in the same manner until a large number of individuals are formed from the original two, or from the one individual formed by the union of the first two. In this class of creatures, fecundation involves the loss of the identity of the parents. This form of fecundation or reproduction is illustrated on Plate I, Fig. 3. The rapidity with which the process above described may occur is truly astonishing. In a species of the *protococcus* which sometimes appears in win-

ter, covering in some instances large tracts of country, producing the remarkable phenomenon of green snow, the multiplication is so rapid that more than 60,000 individuals may be produced from a single pair in one hour, and in thirty minutes more time a number exceeding that of the inhabitants of the globe.

In the higher orders of plants we observe a process of fecundation of a much higher type. The male and female elements of generation are produced by flowers, which are the sexual organs of plants. In many cases the two elements are produced by distinct flowers, either from the same plant or from separate plants, although in some cases the two elements are produced by different parts in the same flower. The male element is known to the botanist as the *pollen*, which is produced by the *anthers*, usually borne at the top of long filaments termed *stamens*. By various means, chiefly through the agency of the wind and the visits of insects from flower to flower, the pollen is carried from the male flower or the male parts of flowers to the end of the pistil or pistils of the female flowers, on which the little pollen grains are lodged when the process of fecundation begins. A little sprout is sent out from the pollen grain and down through the pistil of the flower to the ovary at the base of the pistil, in which is secreted a little cell or a number of minute cells, corresponding to the ovum of female animals. When the ovum is reached by the little filament from the pollen grain, the process of fecundation is completed, and the proc-

ess of development begins, and in due time results in the production of a perfect seed, from which another plant may be produced. The reproductive organs of plants and the process of fertilization are well represented on Plate III.

The devices of nature for accomplishing the act of fecundation in plants are so marvelous as to be almost incredible. The following graphic description of the process we quote as a concise statement of the results of the most recent scientific investigations :—

“Deep hidden within the flower’s heart lies the little nursery where the seeds are born; most cunningly the pistil and the stamens watch each other like true lovers for a greeting; tenderly the petals close around them in the cool, and open through fit hours of sunlight. And when the stamens and the pistil cannot meet directly, but the message must be borne by insect rovers, then the complication of contrivance to secure the transport of the message almost exceeds belief. The pollen must be brought from a certain spot in one flower and left on a certain spot within another. Says one, speaking of Darwin’s investigation of the orchids: ‘Moth-traps and spring-guns set on these grounds, might be the motto of these flowers. There are channels of approach, along which the nectar-loving insects are surely guided, so as to compel them to pass the given spots; there are adhesive plasters nicely adjusted to fit their proboscides or to catch their brows, and so unload their pollen-burden; sometimes, where they enter for the honey, there are hair-triggers carefully set in their necessary

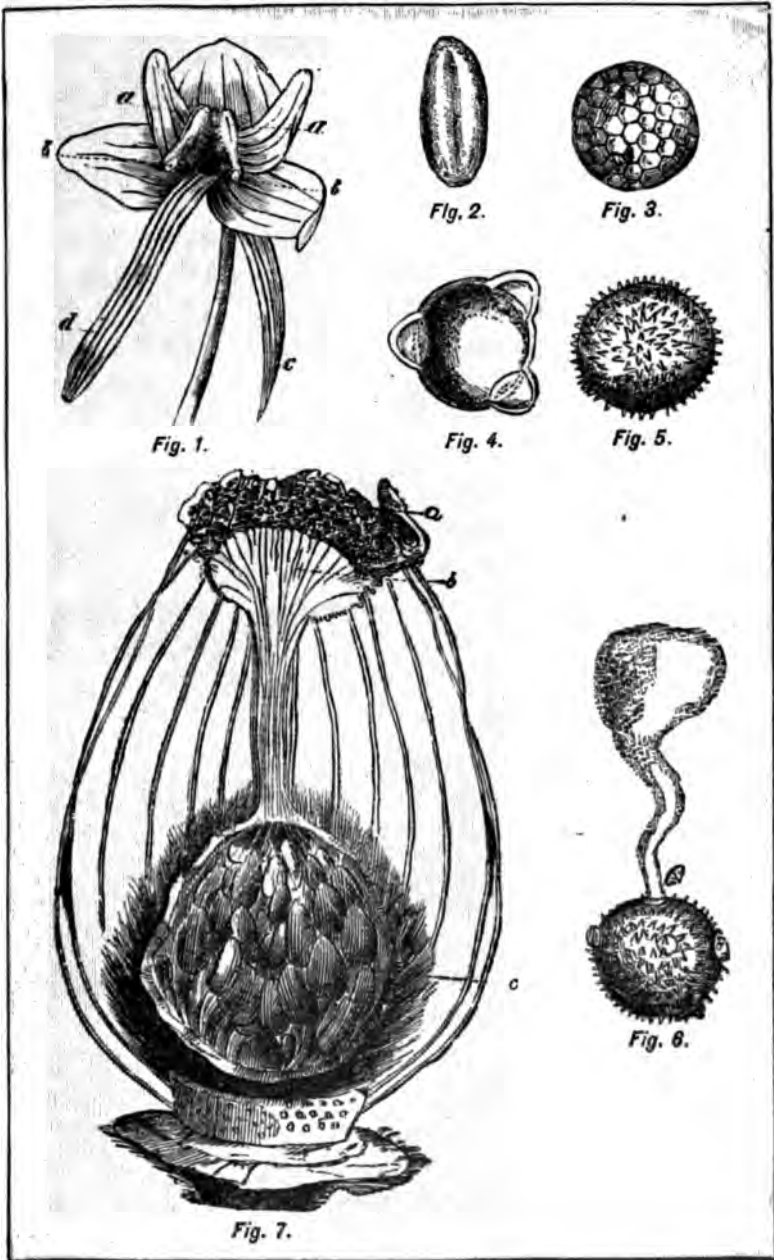


PLATE III.

path, communicating with explosive shells that project the pollen-stalks with unerring aim upon their bodies.'"

In all except the very lowest forms of animal life, reproduction is performed by the union of a male and female element produced by separate individuals or by separate parts of the same individual, as in the case of the higher plants. This is true even of the minute infusoria, which have been demonstrated to reproduce their species by means of eggs.

In some classes of animals, as the tape-worm, earth-worm, snail, leach, and slug, the male and female elements are produced by the same individual, as is the case with many flowers; but with the single exception of the tape-worm, the species mentioned require the union of two individuals to secure the fecundation of the female element.

The curious manner in which fecundation takes place in the tape-worm is shown in Plate IX, Fig. 2. The spermatozoa are discharged from the testicle by an opening close beside the opening of the canal which receives the numerous eggs from the ovary, which constitutes the greater portion of each segment of the body of this curious creature, and readily find their way back into the interior of the segment, where the process of fecundation takes place.

Animals of this class are known as hermaphrodites, possessing, as they do, both male and female organs of generation. As before remarked, however, the earth-worm, leach, slug, and snail, which are also hermaphrodites, require for fecundation the union of two

individuals. This is true of most of the true hermaphrodites, and is probably also true of many hermaphrodite flowers, the sexual organs of such flowers being often so placed that self-fecundation is much more difficult than fecundation by means of pollen brought by the wind or insects from other flowers.

Some curious instances of true hermaphroditism or double sex have been observed in human beings. Most cases of hermaphroditism, so-called, are really cases in which there is deformity of the sexual organs producing a resemblance to the opposite sex, the cause of which will be explained presently. There are a few cases on record, however, in which individuals have possessed in a degree of development more or less complete, both male and female organs of generation. This anomalous condition would be very difficult of explanation if it were true, as was formerly supposed, that the testicles in the male are the analogues of the ovaries in the female. Some of our most eminent modern biologists, however, have disputed this view, which has been so long held and considered thoroughly established, and some observations have been made in the development of the lower animals which have led to the conclusion that the ovaries and testicles, while in a certain sense analogues, are not really so in the same sense as are the clitoris in the female and the corresponding organ in the male. Among the most interesting of these observations were those made by Van Beneden, who studied with great care the development of polyps. He found that the testicle in these animals is devel-

oped from the outer portion of the embryo, while the ovaries are developed from the inner portion. This is not true of organs which are morphologically identical. It is very probable that what is true in the development of polyps is true also in the development of higher animals and human beings. This accounts for the existence of both sets of organs in human beings, and throws some light on the nature of the fecundating process, by suggesting the idea that the male element of generation represents more specifically one portion of the human organism, while the female element represents more particularly another portion, the union of the two making the complete whole.

Peculiar Modes of Fecundation.—In all of the instances thus far mentioned, fecundation takes place within the body of the individual. In some classes of animals, however, fecundation takes place outside of the body. This is true of most fishes. At certain seasons of the year, as is well known, the female fish, loaded with ova, termed "spawn," visits certain localities for the purpose of depositing her eggs. The waters of certain rivers which empty into the sea are sometimes densely crowded with fish seeking their spawning grounds. Impelled by an imperious instinct, they force their way against the most rapid currents, leaping over obstacles, rushing through foaming rapids, never pausing even for a moment until their destination has been reached. At the same time the male fish, led by the same strong instinct, follows closely in the wake of the female, and when she has

reached her destination and deposited her eggs along the gravelly bottom of some shallow stream, he deposits in the same spot the fecundating fluid or "milt."

In a few of the osseous fishes, fecundation takes place by the union of the two sexes, as in higher animals.

In reptiles, the ova are usually fecundated outside of the body of the female, as in fishes. In certain species of frogs, the male, instead of following the female in order to deposit the fecundating fluid at the same spot with the ova, as is done by most fishes, mounts upon her back, and rides about until she has deposited her eggs, at the same time depositing the fluid by which they are fecundated.

In all the animals known as "air-breathing vertebrates," fecundation is performed by means of a union of both sexes, the male element being deposited in the generative passages of the female through the means of the accessory generative organs of the male. This stage of the process, known as copulation or sexual congress, is usually accompanied in the female, as in the male, by a discharge of fluid, the source of which is the two glands situated near the mouth of the vagina. This fluid was formerly supposed to play an important part in the process of fecundation, and was termed by Hippocrates, "female semen." The act is also attended by an intense degree of congestion of the whole sexual apparatus and intense nervous action. The exact manner in which the spermatozoa of the male find their way to the ovum which is usually located high up in the generative

passages of the female, is not thoroughly understood. Some observations have been made which lead to the belief that the uterus, during the sexual act, is in a state of unusual activity.

Some observers have described a peculiar suction action on the part of the uterus by means of which the seminal fluid might be drawn up into its cavity. Something closely allied to this has been observed in lower animals killed directly after the performance of the sexual act. In some of these cases an active peristaltic movement has been noticed in the Fallopian tubes, the movement being in the downward direction, evidently for the purpose of facilitating the passage of the ovum to the cavity of the uterus. It is quite possible that a movement of the uterus designed to facilitate the entrance of the seminal fluid into its cavity may take place, although it cannot be said that such an action is thoroughly demonstrated. Indeed, it is known that fecundation may take place when there can be no such action on the part of the uterus, owing to the fact that the female is entirely passive during the sexual act. This is undoubtedly true in most of the occasional cases of rape which have been followed by pregnancy. Pregnancy has been known to occur also as the result of sexual union in which the female was unconscious, in deep sleep, or under the influence of chloroform or a narcotic.

The fact that the action of the cilia of the epithelial lining of the greater portion of the uterus and of the Fallopian tubes is in the downward direction, producing a more or less constant current toward the

mouth of the womb, leads to the conclusion that there is some such action on the part of the uterus. It may be considered possible, however, that the spermatazoa find their way to the cavity of the uterus and even higher up in the generative passages by their own efforts. It is well known that when capable of fecundating the ovum, the spermatozoa are very active, and capable of propelling themselves in a suitable fluid by means of their filamentous appendages. The form and structure of the spermatozoön, or male element of generation, in man and some lower animals, is shown on Plate IV, together with human and other ova in various stages of development.

The spermatozoa may come in contact with the ovum either in the uterus, in some portion of the Fallopian tubes, or even at the surface of the ovary, fecundated ova having been found in all these localities. After contact, a union of the spermatozoa and the ovum seems to take place. In some lower animals a distinct opening in the membrane surrounding the yolk has been observed, and spermatozoa have been seen crowding their way through this opening to the interior of the ovum. No similar opening has been seen in the ovum of the human female, but there is evidence for believing that such an opening exists, for it is well known that spermatozoa penetrate the wall of the ovum, or at least make their way into the interior. It is possible, however, that this may occur without an opening, as it is a well-attested fact that the embryos of trichina pass readily through the mucous membrane of the intestines with-



Fig. 1.

Fig. 2.

Fig. 3.



Fig. 4.

Fig. 5.

Fig. 6.

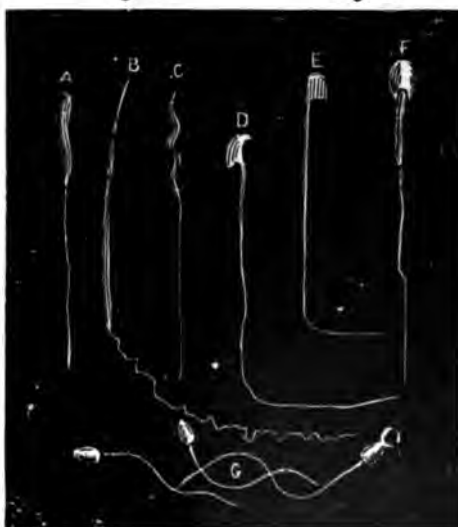


Fig. 7.



Fig. 8.

PLATE IV.

out the aid of openings. Each ovum is penetrated by a number of spermatozoa, though how many are required for fecundation is not known. Experiments with the eggs of frogs have shown that so small a quantity as three grains of the male fecundating element is sufficient for the fertilization of many thousands of ova.

The Nature of Fecundation.—The process of fecundation seems to be an actual molecular union of the male and female elements exactly similar to what we find in some of the lowest orders, in which the male and female individual are wholly lost in the individual which they unite to form, and which afterward divides into a large number of progeny. Some have supposed fecundation to be a sort of electrical process, the male being the positive element, and the female the negative. This theory is undoubtedly visionary, but it is evident that the male element supplies something which is necessary to enable the ovum to undergo development, since complete development cannot take place without fecundation, although cases are on record in which the ovum has developed to a considerable degree without the influence of the male element. It has also been suggested that the male element supplies a sort of necessary nutriment to the ovum, by which its development becomes possible. The suggestion first made is probably the correct one; viz., that the ovum and spermatozoa each contain certain germinal elements necessary for the formation of the new individual, neither being complete in itself. The only objection

to this theory is the fact that a large number of spermatozoa are apparently required for the fecundation of a single ovum. At any rate, it is well known that in the case of some of the lower animals, as, for example, the frog, a very large number of spermatozoa enter each ovum and disappear in its interior, becoming amalgamated with its elements.

It has been suggested that the sex of progeny may depend to a considerable degree upon the number of spermatozoa which unite with the ovum, a certain number being sufficient to produce males and a smaller number females. The resemblance of children to their father or mother has also been accounted for in the same way; a large number of spermatozoa uniting with the ovum producing a preponderance of the male characteristics of the sex, and a lesser number the contrary.

It is useless to devote space to a discussion of the relative importance of the male and female reproductive elements, since neither is capable of independent development.

Conception.—There is considerable evidence for believing that the union of the spermatozoa with the ovum takes place in some portion of the Fallopian tubes. After this has been effected, the ovum usually soon passes down to the cavity of the uterus. Sometimes, when fecundation occurs at the surface of the ovary, the ovum loses its way, and remains in the abdominal cavity. Its progress down the Fallopian tube is also occasionally stopped before it reaches the uterus. The result of its arrest in these abnormal

positions will be referred to elsewhere. When the ovum reaches the uterus, it soon becomes attached to some portion of its wall, the mucous membrane having been previously prepared for its reception by a process of thickening and the formation of little pockets, one of which receives the ovum, and to which it becomes attached. The adhesion of the ovum to the lining membrane of the uterus is known as conception. This usually takes place without the knowledge of the individual, but some women claim to be able to detect the moment at which conception takes place by peculiar sensations, usually a slight dizziness or faintness. From this time on, however, in most cases, the ovum gives no indication of its presence for some time, although very great changes in both the uterus and the ovum are taking place. These will be described presently.

It has been determined that conception is much more liable to occur at certain times than at others. In order that fecundation shall take place, it is of course necessary that the ovum should be present in the generative passage of the female either at the time of sexual congress, or soon afterward. Just how long the spermatozoa may remain active in the generative passages of the female, and capable of impregnating the ovum, is not known, but it is certain that they retain their vitality and efficiency for a number of days after copulation. The ovum is also usually retained for some days in some portion of the generative canal of the female, not usually passing off with the menstrual discharge, but some days later. It is

probably retained from four to ten days after the cessation of the menstrual flow. From these facts it is evident that conception will be most likely to occur a few days before or four to ten days after the menstrual period. Many observations have shown that with the majority of females, at least, conception is not likely to occur during the interval between the periods named. This is known to be the case with lower animals, and while it is not universally true of human females, it holds good in a sufficient number of cases to constitute a general law.

Usually but one ovum is produced at a time in a human female. The same is true of the females of many other classes of animals, as the elephant, horse, and cow. In exceptional cases two or more ova are matured at once, and under favorable circumstances may be fecundated, giving rise to multiple conception. Cases are on record also which demonstrate the fact that two conceptions may take place with a longer or shorter interval between, both ova undergoing development at the same time. This is known as superfecundation. In one case observed by a surgeon in the late war, a mulatto woman gave birth to twins, one of which was nearly white, the other much blacker than the mother. At the time of conception the woman was employed as a domestic in the house of a white man, while sleeping at night with a negro husband. The latter was so thoroughly convinced of her unfaithfulness by the sight of the white child that he turned her out of doors, notwithstanding her constant assertion of her innocence. Cases have

also occurred in which a woman has had two confinements with an interval of several weeks, a period not long enough to allow a new pregnancy to occur, but long enough to show that the second pregnancy must have taken place several weeks after the first. That such a circumstance might occur is evidenced by the fact that in some females menstruation continues several months after conception occurs. As the mouth of the womb remains open for some time, there is no obstacle in the way of a second conception in such cases.

Conception cannot of course occur before the period of puberty, previous to which time the cells of the ovaries from which the ova are developed, exist only in a rudimentary condition, as shown by Plate IV. The change known as puberty occurs at or near the age of fifteen years, and conception may occur at any time from this period until the menopause, or change of life, which usually occurs sometime between the ages of forty-five and fifty. Cases are on record in which the ability to conceive has been acquired much earlier or retained until a much later period than the ages mentioned. In one observed case, a girl became a mother at eight, and an instance is given, which seems to be well authenticated, of the occurrence of conception after sixty.

A large number of observations have shown that conception is less likely to occur between the ages of fifteen and twenty than between twenty and twenty-four, so that women marrying young are less likely to be fruitful than those marrying when more mature.

No point in biology is better settled than that the mental, moral, and physical condition of the parents at the time of conception may be impressed on the offspring, and usually has an important influence on the character of the progeny. The influence of the male parent is particularly strong at this time, probably more so than that of the female, whose influence over the offspring is fully as great ultimately, however, on account of the much longer time through which it is exerted during gestation.

Heredity.—How mental, moral, and physical traits of character are transmitted from the parents to the offspring is a problem which has not yet been fully solved, but there is no doubt as to the fact. Stock-breeders well recognize the truth of this principle, and frequently take advantage of it. Strong impressions made on the mother soon after conception has occurred, are likely to exert a strong influence on the child. The patriarch Jacob seems to have understood this physiological fact, and to have made use of it to his own advantage while caring for the flocks of Laban, as we learn from the following passage :—

“And Jacob took him rods of green poplar, and of the hazel and chestnut tree, and pilled white streaks in them, and made the white appear which was in the rods. And he set the rods which he had pilled before the flocks in the gutters in the watering troughs when the flocks came to drink, that they should conceive when they came to drink. And the flocks conceived before the rods, and brought forth cattle, ringstreaked, speckled, and spotted.”

Another interesting fact which has been observed is, that an impression more or less permanent seems to be made on the female by the first pregnancy, so that the offspring of subsequent conceptions are made to partake of the characters of the male by whom the first conception occurred. On this account, breeders of blooded animals are very careful to avoid employing an inferior male, especially for the first time that the animal is made to become pregnant, since all subsequent offspring would be likely to partake of the characters of the inferior male first employed. The same thing is often observed in human beings: a woman marries the second time after the death of her first husband, and her children by her second husband are very likely to resemble her first husband as much as the second. The resemblance in the color of the hair and eyes is often particularly noticeable. In case a white woman has had children by a negro, but afterward bears children to a white man, the latter will be very sure to exhibit some of the characteristics of the negro race in a marked degree.

Cause of Sex.—It was long supposed that the right ovary in females and the right testicle in males produced elements which when united in fecundation would develop into males, while the elements produced by the left ovary and the left testicle would develop into females. The erroneous character of this theory has been amply shown by repeated instances in which the right testicle in man or the right ovary in woman have been removed on account of disease, without affecting the ability of either parent to pro-

create males as well as females. A corresponding fact has been observed in cases in which the left ovary has been removed. It is probable that the relation of the ages of the parents to each other has something to do with the determination of sex. For example, when a young and vigorous man marries a woman considerably older and less vigorous than himself, the offspring will be very likely to be males. When the contrary is the case, that is, when a man somewhat advanced in years and not in vigorous health marries a young and vigorous female, the offspring are very likely to be females.

Careful observations have been made which seem to show that the chief circumstance in the determination of the sex is the time in relation to ovulation when fecundation takes place. The evidence is pretty strong that when fecundation of the ovum occurs very soon after menstruation, the offspring will be of the female sex; while fecundation occurring several days later, just before the ovum would naturally leave the generative passages of the female if not fecundated, is pretty certain to result in male offspring. It is thus possible to predict with some degree of certainty whether the result of conception will be a male or female, by noting the time with reference to menstruation when conception occurs.

The idea has been advanced that the sex of a child is determined by influences brought to bear on the embryo after fecundation, but many facts in natural history go to show that the sex of the progeny is determined at fecundation, and there is great probability

that the theory stated in the preceding paragraph is the correct one. There must be also some reason for the theory, since it essentially agrees with the observation previously mentioned with reference to the influence of the relation of the ages and physical condition of the parents on the offspring. The ovum just ready to be cast off, might well be compared to the female advanced in years, and fresh spermatozoa to the young and healthy male married to such a female.

It is perhaps possible also that the number of spermatozoa which penetrate the ovum has something to do with the determination of sex, as well as other physical characteristics.

The Beginning of Life.—The moment fecundation is completed—the process seems to be instantaneous—the life of the new individual is begun. Within a very few hours great changes take place in the ovum, which will be described presently. What was formerly a mere speck of fat and albumen surrounded by a delicate film, is now destined to become, under favorable circumstances, a fully developed human being. This little speck contains all the possibilities of the future of the individual man or woman to be developed from it. From being a mere cell, it has now come to be a human being, of very small dimensions, it is true, but possessed of as indubitable rights, as much worthy of respect, as though it were a matured man or woman.

The idea held by the ancients that individual life did not begin until the change known as “quicken-
7

occurred, has no basis whatever in fact. No especial change takes place in the embryo at the period known as quickening. Whatever individuality the human being possesses exists in rudimentary form in the ovum, immediately after fecundation has taken place. From this time no radical change occurs. We have simply a process of unfolding and development, which continues until the man or woman has reached full maturity. The immediate bearing of this fact in relation to the means adopted to avoid pregnancy and the crime of abortion will be considered elsewhere.

PREGNANCY, OR GESTATION.

After fecundation, and during the subsequent process of its development, the ovum is treated in various ways by different classes of animals. Many animals, as is the case with many reptiles, deposit the fecundated eggs in the sand or in some secluded location, and give them no further attention. Fishes usually deposit their eggs, and then allow their young to shift for themselves when hatched. There are, however, some very notable and interesting exceptions to this method of treating the young among fishes and reptiles. For example, Prof. Wyman gives an account of a South American fish which carries its eggs in its mouth until long after the young are hatched. In one instance, he found a young fish nearly three inches long in the mouth of its parent. This office seems to be usually performed by the male, who plays the part of nurse for the

young of its mate. The number of eggs usually found in the mouth of these fish during the breeding season is twenty to thirty. The question would naturally arise, How can the fish eat when its mouth is thus employed as a nursery, without swallowing its progeny? Prof. Wyman answers this question by stating the fact that he has frequently found among the eggs filling the mouth of the fish those of other varieties of fish—rarely, however, more than one or two of other species—which leads him to the conclusion that the eggs are allowed to escape from the mouth for a short time while the fish is feeding, being afterward gathered up again.

A curious fish known as the hippocampus, or “sea-horse,” affords a similar instance of the male acting as a nurse for its young. The males of these fishes are furnished with a pouch upon the lower surface of the body behind the anal opening, in which the eggs of the female are carefully placed and cared for until hatched.

The continent of Europe is the home of a curious species of reptile known as the “obstetric toad,” the male of which attaches the eggs of the female to his legs, carrying them about with him until they are hatched.

Naturalists give numerous illustrations of care for their young on the part of fishes and reptiles. For example, Prof. Wyman describes a female fish which carries her eggs carefully arranged along the lower surface of her body, each one attached to a cup at the end of a cylindrical thread. The same naturalist

mentions a somewhat similar peculiarity observed in the "swamp toad." After the eggs were laid by the female and fecundated by the male, the latter arranges them one by one at regular intervals on the back of the former. In due time, a thin wall of skin grows up around them by which they are inclosed and protected.

A species of tree-frog carries about its young ones on its back, the little fellows hanging on by their mouths.

Another species of tree-frog has a little pouch on its back in which the male carefully stows away the eggs, which are thus cared for until hatched.

Fishes and reptiles usually "lay eggs" either before or after fecundation; but in a few cases, the young are brought forth alive, and a single case has been observed in which a snake has laid eggs and brought forth living young at the same time.

In the human female, as in the females of all the mammalia, the fecundated ovum is retained during its development. This process usually takes place in the uterus, though, as we shall presently see, it may occur elsewhere.

As before stated, while the ovum is becoming matured and ready to be cast off from the ovary, the mucous membrane of the uterus is undergoing a change preparatory to receiving the ovum in case it shall become fecundated. After fecundation takes place, the ovum attaches itself to the wall of the uterus, and changes at once begin in both the ovum and the womb to which it is attached. We will describe first the changes which take place in the latter.

Changes in the Uterus.—After conception, the uterus at once begins to increase in size. The physiological congestion which occurs periodically at menstruation and momentarily during the sexual act, becomes now a permanent condition to be continued for several months. The enormous increase in size of the uterus is the result of this increase of the blood supply. The muscular fibres of the uterus, which are of the unstriated variety and very small in the unimpregnated state, become enormously developed. The blood channels, which are also small, become dilated, in the case of the veins, to an enormous extent, so as to form sinuses.

Changes also take place in the nerve centers from which the uterus derives its nerve supply, especially those of the organic system, which likewise participate in the development which occurs in the other parts of the generative apparatus.

The most remarkable changes of all, however, take place in the mucous membrane lining the interior of the uterus. Something of the character of these changes is shown in Figs. 1 to 5, Plate VI. In the unimpregnated state, the mucous lining of the uterus is very thin and scantily supplied with blood-vessels. After conception occurs, the membrane becomes greatly thickened, and its blood-vessels enlarge and increase in number with great rapidity. These changes soon give to the membrane a velvety appearance. The activity in the development of the membrane is particularly great in the immediate vicinity of the ovum, around which folds of membrane soon

begin to project forward, and very shortly meet over the free surface of the ovum, grow together, and thus completely inclose it. The ovum is now shut up in a cavity by itself, distinct from the general cavity of the uterus.

The remaining changes of the greatest importance which occur are in the ovum itself together with its inclosing membrane, which has been formed from the uterine mucous membrane, and which may be now considered as a part of the developing ovum.

Development of the Ovum During Gestation.—Immediately after fecundation, the ovum begins to grow, and subdivisions take place in its interior. This process is known as segmentation. The nature of the change will be readily understood by reference to Figs. 1 to 6, Plate IV. After this process has gone on for some time, a large number of cells have been formed within the ovum. These cells unite together at the surface of the yolk, forming a sort of membrane, on which presently appears a straight line which is termed the *Primitive Trace*. It is, in fact, a sort of furrow, the sides of which gradually grow up and close above it, subsequently forming the spinal canal of the embryo. The appearance of the primitive trace, as shown by the microscope, may be seen in Fig. 2, Plate VII. Some cases have been observed in the examination of lower animals in which the primitive trace has been double or divided at one of the extremities. This is supposed to be an explanation of the manner in which double monsters are formed. Subdivision of the trace in the end destined to form



Fig. 1.— Siamese Twins.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

the head, as shown in Fig. 3, Plate VII, would give rise to a monster with one pair of legs and one trunk, but with two heads. If the division extended to near the middle of the primitive trace, the succeeding development would result in the formation of a monster with one pair of legs but two trunks more or less completely separated. A trace forked at the end destined to form the inferior portion of the body would result in a monster having one head and trunk with two pairs of legs. Two complete primitive traces united at the center by a band as shown in Fig. 4, Plate VII, would result in embryos joined together like the Siamese Twins. The manner in which the internal structures of these curious individuals were united is shown in Fig. 1, Plate VII.

The membrane of which the primitive trace is formed divides into an inner and an outer layer, between which is formed another layer which again subdivides into two, making four layers in all. From these different layers all of the different parts of the individual are developed, the outer layers going to form the skin, muscles, bones, and nerves; while the inner layers form the walls of the alimentary canal and other internal parts of the body. Thus certain groups of cells are set apart for one kind of work, while to other groups are allotted other functions. One group forms the liver, another the kidneys, another the spleen, another the pancreas. Each group, when its development is completed, performs a function peculiar to itself. Still other groups form the brain, and when their development is complete, per-

form the various offices required for the production of thought, the reception of impressions, and the control of the operations of the body. The various foldings, ingrowings, projection of various parts and absorption of other parts, subdivisions, and other complicated processes by which the development of the individual is completed, we shall not attempt to trace, as information of this kind is too technical to be interesting to the general reader. Some points of special interest will be noted, however. One of the most remarkable of these is the fact that a human being in the process of development passes through various stages, each of which represents the permanent condition of some class of lower animals.

The alimentary canal, as first produced, is simply a straight tube, a form in which it permanently exists in such animals as the eel. After a time, dilations occur in the upper and the lower portion, which ultimately form the stomach and the large intestine. The convolutions of the small intestine are formed by lengthening the canal. The upper dilation — the stomach — is usually on the left side of the body; while the most dilated part of the expanded portion, which ultimately forms the *cæcum*, is placed at the right and lower portion of the abdominal cavity. Cases sometimes occur in which this arrangement is reversed. When this happens, a corresponding reversion occurs in the position of all the other organs contained within the trunk of the body, the liver being upon the left side instead of the right, the heart transposed to the right side, and other corresponding changes oc-

currence. We met a case of this kind a few years ago in a young girl whom we were treating for scrofulous disease, whose heart we were led to examine by complaint of the occurrence of palpitation. After seeking in vain for the presence of the heart in its usual location, we were astonished to find it beating vigorously and without any evidence of disease, on the right side, several inches from its normal position. The idea has been suggested that this peculiarity is more likely to be present in left-handed people than in others, the disposition to use the left hand rather than the right growing out of the abnormal position of the internal organs.

The heart, like the alimentary canal, is at first a straight tube, which, by twisting around itself and undergoing various other changes by which it is divided by longitudinal and transverse partitions into four chambers, finally becomes developed into the heart as found in adults.

The arms and legs are at first simply little buds projecting from the sides of the embryo. As they grow out, their tips are subdivided into rudimentary fingers and toes. Still further development results in the formation of joints and the various segments of the arms and legs. In different classes of lower animals, the developmental process seems to stop short at different stages. In the seal, the feet of which are webbed, development ceases when the subdivision of the original bud has occurred only in part. The same thing is observed sometimes in human beings, in which the fingers and toes are often found

more or less united, in some cases being joined to their tips. In the walrus, the limbs consist of little more than a wrist and ankle, with fingers and toes attached. With animals a little higher in the scale, the limbs are a little more fully developed. Most quadrupeds possess knee and elbow joints. The lion, panther, and other members of the feline species have still more perfectly developed limbs, while in the highest apes the limbs are nearly as free in their movements as in human beings.

As before remarked, we have in the process of development of the human embryo types of all these peculiarities of structure observed as permanent conditions in the lower animals. The human embryo, during the earlier stages of its development, cannot be easily distinguished from the embryo of various lower animals. This is readily shown by the figures on Plate E, which show the resemblance between the embryo of the dog at four and six weeks and the human embryo at four and eight weeks, respectively, to be so close that a casual observer would pronounce them to be identical. It will be observed that at this early period of their existence human beings, as well as lower animals, are furnished with caudal appendages. In later stages of development, this portion of the body gradually disappears, until in the mature human form it is represented by a mere vestige termed the *coccyx*.

The formation of the face in the embryo is a very interesting process. Like the abdominal and thoracic cavities, the cavities of the nose and mouth are formed

by the closing together of folds or plates of tissue which project from the side and gradually approach each other. When the process of closing together is not quite complete, a deformity known as harelip results. If the deficiency affects the bony cells and soft tissues, an opening is left through the roof of the mouth, which is termed cleft-palate.

Arrest of development may occur at any of the various stages of the process just described. This may involve the embryo as a whole or one or more parts only, while other parts are allowed to go on to full development. It is in this way that congenital deformities arise. The causes of arrest of development are not very well understood.

It should be mentioned in this connection that arrest of development or abnormal development, which also sometimes occurs, are the leading causes of those hideous creatures to which women sometimes give birth, known as monsters. The stories of females becoming pregnant by dogs and other animals, and giving birth to offspring resembling the supposed fathers, undoubtedly originated in the birth of monsters, which were like other human embryos during the first stages of development, but by an arrest of development are born with a resemblance to some lower animal. It is impossible for a human ovum to be fecundated by other than human spermatozoa.

Hermaphrodites, or persons supposed to possess the sexual organs of both sexes, are, as a rule, simply cases of arrested or exaggerated development. Instances are very rare in human beings in which both

ovaries and testicles are found in the same individual, but numerous cases have been observed in which certain parts of the sexual organs of the female were so abnormally developed as to produce a striking resemblance to the organs of the male, and the reverse.

Nourishment of the Embryo.—Soon after the segmentation of the ovum and the formation of layers of cells or membranes at its surface, that portion of it lying next to the uterine wall undergoes a peculiar development. Little vascular loops are formed which interlace with similar loops formed on the surface of the lining of the uterus. These loops become so closely united with each other that the blood-vessels of the ovum, which begin to form at a very early stage, and those of the uterus have only a very thin partition between their walls. Through this delicate membrane the nutritive fluids of the mother's blood pass readily into the ovum. After the circulation of the ovum is fully developed, the blood corpuscles of the mother and those of the embryo are by this arrangement allowed to come very close to each other without coming in actual contact. The blood corpuscles of the mother never pass into the veins of the child, nor vice versa. If any such change did occur, it could be readily detected, as the blood corpuscles of the embryo are of a different size from those of the mother. The interchange of fluids between the embryo and the mother takes place very readily, however, by means of the arrangement briefly described above, which is known as the *placenta*.

As the embryo advances in development, it be-

comes separated from the placenta, but retains connection with it by means of the *umbilical cord*, which contains two arteries and a vein. The arteries convey blood from the embryo, or *fœtus*, to the placenta, from which it is returned by means of the veins. During the passage of the foetal blood through the placenta, it undergoes a double change, receiving from the blood of the mother nutritive elements by which the process of development may be maintained, and giving back to the mother's blood in exchange the impurities and excrementitious elements which have been derived from the foetus. This intimate association between the foetus and the mother through the blood explains the mysterious influence of the former upon the latter which has been before referred to. It is undoubtedly in this way that the impressions are made which give rise to the curious circumstances previously mentioned, that the children by a second husband frequently resemble the former husband in both character and features. Experiments upon animals show that the mother may be affected even fatally by poisonous substances introduced into the body of the foetus. Cases are also frequent in which the mother contracts constitutional disease from a foetus which has inherited the same from its father. This is particularly true of syphilis. This relation of the circulation of the foetus with that of the mother also explains, to some degree at least, the remarkable influence which is exerted upon the foetus by the physical and mental condition of the mother.

Respiration of the Fœtus. — How the process of respiration could be carried on in the unborn infant was for a long time a matter of deep mystery, but it is now very well understood that the placenta is for the fœtus an organ of respiration as well as of nutrition. The blood of the fœtus is carried to the placenta through the umbilical arteries, charged with carbonic acid gas, and coming into close proximity, in the placenta, with the blood of the mother, — which, through exposure to the air in the mother's lungs, has become charged with oxygen, — an interchange takes place, the carbonic acid gas being absorbed by the blood of the mother, and the oxygen by that of the fœtus, so that the foetal blood returns in the umbilical vein purified and oxygenated, just as the blood returns from the lungs to the heart in the adult individual. With this fact in view, it is unnecessary to suggest the importance of securing to the mother an abundant supply of fresh air, since she has to breathe for the fœtus as well as for herself. This point will be dwelt upon more at length elsewhere.

The Fœtal Pulse. — The action of the foetal heart can be distinctly heard through the abdominal walls of the mother, after the fourth or fifth month. In some cases the beating of the foetal heart has been traced as early as the end of the eleventh week. In order to observe the feeble sounds which are produced by the yet imperfectly developed heart of the fœtus, the ear must be placed upon that portion of the abdominal wall directly over the heart. The point at which the sounds may be most easily distinguished

in the majority of cases is a little to the left of the median line, about half way between the umbilicus and the symphysis pubis. The rate of the foetal pulse varies from 130 to 160 a minute.

A large number of observations have shown that the pulse of female infants is more rapid than that of males, so that this may be a means of distinguishing between male and female children before they are born. The average rate in females is about 144 per minute; in males, 131.

Position and Condition of the Child in the Womb.—During the early months of gestation, the condition of the child varies considerably. As the end of pregnancy approaches, however, the position becomes more and more constant, and near the end of gestation, in the majority of cases, the position of the child in the womb is with the head downward, and the back forward and to the left, with the limbs in a state of flexion, as shown by reference to Fig. 1, Plate IX.

Amniotic Fluid.—In order to protect the delicate structures of the foetus from the unpleasant effect of sudden jars to which the mother is liable to be subjected, and for various other apparent reasons, it is not made fast to the interior of the uterus, but floats, or rather is suspended, in a sac filled with fluid, which fills the whole of the interior of the distended womb not occupied by the foetus. This fluid, known as the *amniotic fluid*, or the "*waters*," varies considerably in quantity, sometimes being so abundant as to amount to dropsy, at other times being barely sufficient to

answer the purpose for which it was designed. This fluid is very complex in its composition, at first resembling very closely the serum of the blood, but as pregnancy advances becoming more and more charged with excretory matters thrown off by the skin and kidneys of the foetus.

Summary of Development.—The following is a concise summary of the process of development at different stages as given by Flint:—

“At the third week the embryo is from two to three lines in length. This is about the earliest period at which measurements have been taken in the normal state.

“At the seventh week, the embryo measures about nine lines; points of ossification have appeared in the clavicle and lower jaw; the wolffian bodies are large; the pedicle of the umbilical vesicle is very much reduced in size; the internal organs of generation have just appeared; the liver is of large size; the lungs present several lobules.

“At the eighth week, the embryo is from ten to fifteen lines in length. The lungs begin to receive a small quantity of blood from the pulmonary arteries; the external organs of generation have appeared, but it is difficult to determine the sex; the abdominal walls have closed over in front.

“At the third month, the embryo is from two to two and a half inches long and weighs about one ounce. The amniotic fluid is then more abundant in proportion to the size of the embryo than at any other period. The umbilical cord begins to be

twisted; the various glandular organs of the abdomen appear; the pupillary membrane is formed; the limitation of the placenta has become distinct. At this time, the upper portion of the embryo is relatively much larger than the lower portion.

“At the end of the fourth month, the embryo becomes the foetus. It is then from four to five inches long and weighs about five ounces. The muscles begin to manifest contractility; the eyes, mouth, and nose are closed; the gall-bladder is just developed; the fontanelles and sutures are wide.

“At the fifth month, the foetus is from nine to twelve inches long and weighs from five to nine ounces. The hair begins to appear on the head; the liver begins to secrete bile, and the meconium appears in the intestinal canal; the amnion is in contact with the chorion.

“At the sixth month, the foetus is from eleven to fourteen inches long and weighs from one and a half to two pounds. If the foetus be delivered at this time, life may continue for a few moments; the bones of the head are ossified, but the fontanelles and sutures are still wide; the prepuce has appeared; the testicles have not descended.

“At the seventh month, the foetus is from fourteen to fifteen inches long and weighs from two to three pounds; the hairs are longer and darker; the pupillary membrane disappears, undergoing atrophy from the center to the periphery; the relative quantity of the amniotic fluid is diminished, and the foetus is not so free in the cavity of the uterus. The foetus is now viable.

"At the eighth month, the foetus is from fifteen to sixteen inches long and weighs from three to four pounds. The eyelids are opened, and the cornea is transparent; the umbilicus is at about the middle of the body, the relative size of the lower extremities having increased.

"At the ninth month, the foetus is about seventeen inches long and weighs from five to six pounds. Both testicles have usually descended, but the tunica vaginalis still communicates with the peritoneal cavity.

"At birth, the infant weighs a little more than seven pounds, the usual range being from four to ten pounds, though these limits are sometimes exceeded."

We have known instances in which infants have weighed scarcely more than three pounds at birth, and yet have attained normal development afterward, though requiring great care during the first few weeks of life. Prof. Carpenter, of London, in his human physiology refers to a case in which the weight at birth was but one pound. At three and a half years the weight had increased to about 30 pounds.

Length of Gestation.—The length of time required for the development of the young sufficiently to enable them to exist outside the body of the mother differs greatly in different classes of animals. In the horse the period of gestation is 335 days, while the rabbit matures its young in the brief period of 30 days. In the cow about 280 days are required. In the human female, the period intervening between conception and birth is about forty weeks or

ten lunar months. The exact length of the period in an individual case cannot always be determined on account of the difficulty of fixing the exact date of conception; but in those instances in which the circumstances have been such as to render the fixing of the date of conception accurately, it has been found to vary little from 275 to 280 days.

The period of gestation is frequently somewhat shorter than this, many children being born from four to six weeks before the usual time. If the period of gestation is shorter than seven months, the foetus will not be sufficiently developed to live. Infants born before the full term of gestation require especial care and the most careful nursing, and those born before the completion of the seventh month very seldom survive birth more than a few days. The period of gestation is sometimes extended two or three weeks beyond the end of the tenth month. Cases have been reported in which the period has been much longer than this, but they are not considered authentic.

Quickening.—The term quickening is applied to the time when the mother for the first time becomes conscious of the movements of the foetus within the womb. This was formerly believed to be caused by the sudden descent of the foetus from the uterus into the pelvic cavity, but it is now well known to be produced by the movements of the limbs of the child when they come in contact with the walls of the uterus.

This is generally felt about the beginning of the

fifth calendar month from the beginning of pregnancy, or about the middle of gestation. There is no doubt but that the limbs of the foetus move often and quite vigorously before this period, but they are not felt by the mother on account of the fact that not until about this time does the uterus become sufficiently enlarged to bring its walls in direct contact with the walls of the abdomen. The body of the uterus contains very few sensory nerve fibres, those being distributed in its neck, and it is only after the uterus comes in contact with the abdominal wall so that the shock of the foetal movements is communicated to the latter tissue, which abounds in sensory fibres, that the mother becomes conscious of the activity of the developing embryo. These movements sometimes become so vigorous as to give the mother absolute pain so as to cause her to cry out in agony. They are the result of a vigorous kicking action on the part of the foetus.

The period of quickening was formerly considered one of great importance, but is now looked upon as of very little significance except as forming positive evidence of the existence of pregnancy. The idea that at this time the foetus first becomes possessed of individual life was long since exploded, and the laws relating to criminal abortion which were based on this ancient notion ought to have been repealed at least half a century ago. As we have before shown, individual life begins at the moment of fecundation, and whatever rights the developing being may possess after the period of quickening, it certainly possesses before.

Changes in the System of the Mother During Gestation.—While the remarkable changes previously described are occurring within the body of the mother, it would certainly be very remarkable if some change did not occur in the system at large in some small degree, at least, commensurate in character. As a general rule, the mother's attention is first called to her condition by the fact that the usual monthly sickness does not occur at the proper time, or, if it does occur at all, the discharge is so slight as to be hardly appreciable. There are cases, however, in which menstruation occurs several times after conception takes place, and in occasional instances, the periodical discharge goes on during the whole period of gestation. After a few weeks, in many instances, general symptoms, affecting the nervous system chiefly, make their appearance. After a short time, the increase in size of the lower portion of the abdomen becomes apparent. The latter symptom of course increases rapidly as pregnancy advances.

During pregnancy, a change more or less marked takes place in the organic nervous system, the nerve centers having charge of the function of nutrition taking on unusual activity, so that the blood-making and tissue-building processes are carried on much more vigorously than usual. It is owing to this fact that many women enjoy better health during pregnancy than at any other time.

The development of the muscular tissue of the uterus as it increases in size has been already referred to, as well as the great increase in number and size

of the uterine blood-vessels. The veins of the uterus sometimes become so enormously distended that the blood in passing through them produces a sound somewhat similar to that produced by the passage of blood through an aneurism. This is known as the uterine *souffle* or *bruit*, which is one of the signs by which a pregnant condition is distinguished.

During the period of development of the foetus, preparatory to its exit into the external world, certain parts of the reproductive system of the mother are also undergoing preparation for this same event. In the normal condition of the vagina and the external organs of generation, childbirth would be impossible, as the soft parts would not admit of the enormous distension required for the passage of the head and pelvis of the child. During the later months of pregnancy, these parts undergo certain developmental changes by which they are prepared for the ordeal to which they are to be subjected. The walls of the vagina become relaxed and thickened and the canal shortened. The external parts also undergo a similar relaxation. The secretions are greatly increased in quantity, and the tissues formerly firm and rigid become soft and distensible.

In addition to the changes above noted which usually occur, marked mental and nervous disturbances are sometimes present during pregnancy. These cannot be considered perfectly normal, however, and hence will more properly receive attention elsewhere in this work.

Extra-Uterine Pregnancy.—As previously intimated, the ovum is sometimes fecundated at the surface of the ovary, and for some reason does not reach its proper position in the uterus before becoming fixed and beginning development. It is well known that full development may take place in other situations than the uterine cavity. This is known as extra-uterine pregnancy. When the ovum after fecundation falls into the cavity of the abdomen and becomes attached to some portion of its lining membrane, there undergoing development, the case is known as one of *abdominal* pregnancy. If the ovum lodges in the Fallopian tubes and there undergoes development, which is sometimes the case, we have what is termed *tubal* pregnancy. Recent investigations have also shown that in occasional instances the ovum when fecundated at the ovary may never leave its original situation, but may undergo fecundation there, constituting *ovarian* pregnancy. The course of pregnancy in these cases is very similar to that when the ovum is lodged in its normal position. The subsequent dangers to the life of the foetus and of the mother which necessarily arise before the termination of gestation will be considered elsewhere, together with the symptoms by which these abnormal varieties of pregnancy may be known.

Parturition.—At the end of gestation, certain causes, the exact nature of which is not fully understood, give rise to the beginning of a process by which the foetus is expelled from the womb where it has been protected during the process of development. It is probable that the occasion of this action on the

part of the womb is some change in the foetus or its connections with the uterus by which the latter is led to treat its contents, which it has heretofore tolerated with the greatest impunity, as a foreign body which must be expelled. The contractions of the uterus cause a slight separation of the placenta from its walls, which greatly increases as the contractions continue. The membranes, pressing upon the lower portion of the uterine cavity cause gradual dilation of the cervix. After a time, the membranes rupture, and the amniotic fluid is discharged, allowing the head to come in contact with the neck of the womb. With each pain, the head of the child, in normal childbirth, is pressed down more and more vigorously until it is finally expelled from the uterus and shortly afterward from the vagina, making its exit into the world. The separation of the placenta of course causes a laceration of the blood-vessels by which it is connected with the uterus. This would occasion profuse hemorrhage, which might prove fatal in a few moments, were it not for the fact that the same contraction which occasions separation of the placenta also closes the mouths of the lacerated vessels. It sometimes happens that the uterus fails to contract, particularly after the placenta is separated, allowing the greatly dilated blood-vessels to remain fully distended, thus giving rise to a most alarming hemorrhage, which not infrequently occasions death in a very short time if the proper measures are not promptly applied.

Involution.—Directly after the child is born, the placenta and the membranes by which the foetus was invested in the uterus, known as the after-birth, are also expelled, and the act of parturition is complete. In four to six days, seldom later than a week, after childbirth, an examination of the uterus will show that it has undergone a very great reduction in size. This process, known as involution, continues until it is reduced to very nearly its size when in a non-impregnated state, although it never becomes quite as small as before. The muscular fibres, which have been enormously hypertrophied, undergo fatty degeneration, and are absorbed. A new membrane is soon formed to take the place of the old one which was thrown off at childbirth with the placenta, and by the end of the second month, the process is complete. A discharge usually follows childbirth, and continues from one to three weeks, which is composed of bloody serum mixed with disintegrated portions of membranes and blood-clots from the cavity of the uterus, and is termed the *lochia*.

Changes in the Child at Birth.—At the moment of birth, a remarkable change takes place in the system of the new-born infant. Previous to this time, its lungs have been wholly inactive, the process of respiration being performed by the placenta. In order to carry on the processes of respiration, purification, and nutrition, all of which functions have been performed by the aid of the placenta, a peculiar arrangement of the circulatory system has been necessary, two arteries and a large vein

passing between the body of the foetus and the placenta. When the placenta is separated from the uterine walls, the circulation in the blood-vessels of the cord at once ceases. Instantly, an accumulation of carbonic acid begins, and if some other means for the purification of the blood from this poison were not provided, death would occur within a few moments. Just at this critical epoch, the lungs are brought into action. Stimulated by the impending danger to the system of the infant, or by contact of the body with the external air, or by some other means not understood, the lungs begin their important function. This is not of course fully performed at once; time is required for the lungs to become fully expanded and able to do their whole duty in the elimination of carbonic acid gas and the absorption of oxygen. Fortunately, the delicate skin of the infant, which is abundantly supplied with blood-vessels, possesses the ability to transmit oxygen and carbonic acid gas, and is able to supplement the excretory action of the lungs to a very considerable degree. It is on this account, as well as for other reasons, that it is of the highest importance that the young infant should be kept for some time at as nearly as possible the same temperature as that to which it has previous to its birth been accustomed, or about 100° F., since the effect of cold on the skin will be to cause contraction of the blood-vessels, and so prevent it from doing its part in the breathing process. It is not necessary that the temperature of the room should be 100° provided the infant is properly clothed; but the room should be 15°

to 20° higher than is necessary for adults, for the first few days after birth.

In the adult, the blood is obliged to pass through a double circuit in order to complete its tour of the body. Starting from the left side of the heart, it is distributed through the arteries, gathered up by the veins, and returned to the right side of the heart, completing the first circle or first half of its double circuit. From the right side of the heart,—or, in some of the lower animals, the right heart, the two halves being distinct organs,—it is sent to the lungs, and thence through the pulmonary veins to the left side, its starting point. In the foetal condition, as the lungs are not distended with air, little blood passes through them from the right side of the heart to the left side, so that some other provision is necessary to enable the blood to complete its round. The ingenious arrangement which nature has made for this purpose is a valve-like opening in the partition between the right and left sides of the heart which allows the blood to pass from the right side into the left side, but does not allow a movement in the opposite direction. This is known as the *foramen ovale*. This opening is placed in such a position that the current of nearly pure blood that is brought into the right auricle from the ascending *vena cava* passes directly from it without mingling to any great extent with the impure blood which is present in the right auricle, and enters the left auricle, from which it passes to the left ventricle, and is thence carried to the head, arms, and upper part of the body. An-

other peculiar arrangement in the circulation of the foetus is the connection between the pulmonary artery and the aorta by which the greater portion of the blood which would pass through the lungs if they were in action, takes a short cut through the duct provided for the purpose to the aorta, which it enters below the openings of the arteries which supply blood to the upper part of the body. This blood consists chiefly of the venous blood returned from the upper part of the trunk. It thus appears that the upper part of the body of the foetus is provided with pure blood or that which is nearly pure, containing but a slight admixture of venous blood, while that supplied to the lower portion of the body is much less pure in character, being almost wholly venous blood. This fact is given as an explanation of the inferior development of the lower portion of the body at birth, the legs and feet being much less perfectly developed than the arms and hands in the newly born child.

At birth, or soon after, this peculiar course in the circulation of the child is interrupted by the closure of the foramen ovale and the duct communicating between the pulmonary artery and the aorta. It occasionally happens, however, that these openings remain unclosed, in consequence of which arterial and venous blood continue to mingle as before birth, giving the child a bluish appearance, a condition termed *cyanosis*, or blue disease.

Development of the Body after Birth.—At birth, the infantile human being has by no means arrived at a state of complete development. The organs

of the special sense, sight, hearing, and taste, as well as the olfactory sense and the sense of touch, are dull, and the degree of intelligence is small, much less than in the young of many of the lower animals. The development of the lower extremities is very much inferior to that of the rest of the body, while the head is very large in proportion. The following table, showing the difference in proportion of the various parts of the body to the whole, in the foetus and the adult, is interesting :—

		FOETUS AT TERM.	ADULT.
Weight of the entire body,	-	1000.00	1000.00
“ “ brain,	- -	148.00	23.00
“ “ liver,	- - -	37.00	29.00
“ “ heart,	- - -	7.77	4.17
“ “ kidneys,	- -	6.00	4.00
“ “ thyroid gland,	-	0.60	0.51
“ “ thymus gland,	-	3.00	0.00

The arms and legs are curved upward and forward; the chest, abdomen, and all the joints are in a semi-flexed position. The curve of the lower extremities causes the soles of the feet to look toward each other instead of downward as in adults.

During the first few weeks of its existence, the creature does little more than eat and sleep. Its actions are almost wholly if not entirely, automatic or reflex in character. The movements of the hands and feet as well as the act of suckling and undoubtedly also the contortions of the face and its frequent cries, are in no sense volitional.

The remains of the umbilical cord begin to wither

within twenty-four hours after birth, and by the third day are usually completely dried, after which ulceration takes place at the point of connection with the body by which it is separated and thrown off by the end of the first week. In ten or twelve days the raw surface left by the separation of the cord should be entirely healed.

A short time after birth, the hair is shed and replaced by a new growth. This change involves the eye-lashes and minute hairs of the body as well as the head of the infant. In fact, according to Kölliker, a very acute observer, the entire cuticle of the new-born infant is shed and replaced by a new epidermic covering. The *fontanelles*, or soft spaces between the unossified portions of the cranial bones, gradually diminish in size, and at the age of four years are almost completely closed.

The teeth of the infant are at birth very imperfectly developed, and wholly concealed in little pockets beneath the gums. They are twenty in number, consisting of two incisors, one canine tooth and two molars, on each side of each jaw. The fully formed teeth make their eruption from the gums in the following order: The two central incisors, or cutting teeth, in the seventh month after birth; the other two incisors in the eighth month; the first molars at the end of the year; the cuspid teeth, commonly known as the eye-teeth in the upper jaw and the stomach-teeth in the lower jaw, at a year and a half, the second molars, which complete the set, not making their appearance until the end of the second year.

This set of teeth is commonly known as the *temporary* or "*milk*" teeth. They are retained until the seventh year, during which a change begins to take place by which they are thrown off and replaced by a permanent set, which differ considerably in shape and size as well as in number from the first set. The first permanent tooth which makes its appearance is the anterior molar tooth which emerges from the gum just behind the second temporary molar. This fact should be borne in mind, as this tooth is sometimes mistaken as belonging to the first or the temporary set, since it usually makes its appearance before any of the other teeth are shed, or at the age of about six and one-half years. At the end of the seventh year, the temporary teeth begin to give way to the permanent teeth in nearly the same order in which they made their appearance in the jaw. First the two middle incisors are shed; next the lateral incisors about one year later. Within the next two years, the two molars are replaced by the two bicus-pids of the permanent set. One year later, the second permanent molars make their appearance, and between the seventeenth and twenty-first years the wisdom-teeth appear at the extreme end of the gum, making thirty-two teeth in all in the adult.

At the age of about fifteen years, a change known as puberty occurs in both sexes, the nature of which is more fully considered elsewhere.

After the attainment of puberty, the physical development continues, not being perfected until near the twenty-fifth year, when the ossification of the

bones is completed. The development of the brain continues for some years later, not being completed until near the fortieth year.

With the cessation of growth and the attainment of maturity, the vital forces of the system are no longer expended in the processes of development, and hence the various organs of the body are able to manifest their functions more energetically and continuously than during early life. At this period the processes of assimilation and disintegration are just in proportion to the amount of work done.

After a period, the length of which largely depends upon the habits and inherited tendencies of the individual, the period of decline begins. This may be either lengthened or abbreviated in a very large degree by each individual. A person who "lives too fast," will certainly reach the time when the various vital functions begin to fail much sooner than one who by temperate living and careful conformance to the laws of nature conserves and economizes his vital energies. The average length of human life is less than forty years, although many facts and considerations go to show very conclusively that human life would be prolonged to one hundred years, or even greater age, if human beings would strictly adhere to the natural order of life.



THE LITTLE GIRL.



AS infants, little girls and little boys begin life very much alike. Aside from the physical differences between the two, the distinguishing characteristics are not marked at first, but the period of earliest infancy is scarcely passed before marked points of difference begin to make their appearance. These are in part due to inherited peculiarities of disposition; but we are led to believe from considerable observation that many of these differences are more largely the result of education than of inheritance. The toys presented to the girl-baby for her amusement differ radically from those furnished the little boy. She learns to love dolls and tiny cradles, miniature china sets, and similar toys, simply because they are first presented to her in such a way as to attract her attention. Not only in the selection of toys, but in almost every other particular the little girl is treated differently from the little boy. The latter is expected to become a strong, vigorous man, able to hold his own in the battle of life, and is treated with a sort of respect which is inspired by the anticipation of what he is to become. The little girl, on the other hand,

is looked upon as destined to fill an inferior place,—she is to be “only a woman,” and is treated as a toy, petted, kissed, admired as a pretty thing, talked to in a simpering manner, and every way treated quite differently from her little brother. The result of these different modes of treatment is to cause the little boy and little girl to become more and more unlike during the whole period of development.

Under such circumstances, it is not surprising that the tastes of boys and girls are so totally different, and that a casual observer in comparing mature or half developed human beings of the two sexes should be led to believe that the differences between the two sexes are radical and fundamental,—that woman is “the weaker vessel,” and by nature destined to fill a very subordinate place in the social scheme. We do not deny that there are mental as well as physical differences between the sexes, neither do we dispute the position that the work for which the average woman is naturally fitted differs from that for which the average man is best adapted; but we thoroughly believe that the great differences in adaptation which are observed between man and woman, are largely the result of perverting influences acting upon woman from earliest infancy, the effect of which is to make her mentally and physically the inferior of man. Against these perverting influences we protest. There is no reason why little girls should not be treated during the first years of infancy exactly the same as little boys; their physical demands are precisely the same; until near the period of puberty the physical development of the two sexes run parallel.

We regard the popular method of treating little girls as not only senseless but criminal. In case a girl is born of healthy parents, who are well developed mentally, morally, and physically, she loses a large portion of her precious inheritance by the depraving processes to which, in obedience to the dictates of fashion, she is subjected almost from the moment her sex is ascertained. Now and then it happens that a girl-baby's parents are poor and outside the pale of fashionable influence, by which fortunate circumstance she grows up under more favorable influences; and in a large share of these cases it may be noticed that the girl differs far less from the boy than when brought up under the usual influences.

The little girl of fashionable parents is kept in the house, dressed up like a doll, and is taught that she must keep still like a little lady, that she must keep out of the sun, never run out of doors bare-footed, and must try to ape her fashionable mother in every possible manner. Her clothes are so fine that she must never venture near the dirt, and must devote her whole time to playing mother with her dolls, or sitting bolt upright in a high chair with her hands folded while her mother receives company. Starting out in life under such a regimen, while the mind is plastic and just beginning its development, and the whole organization is in the highest degree susceptible to impressions, is it any wonder that the delicate, rosy tint of health soon gives way to sallowness, or that the blooming cheeks become pale and faded, and that the mind becomes dwarfed and shallow?

Early Training.—As just intimated, the influences to which the little girl is subjected in early childhood, often in earliest infancy, are of the greatest consequence. The mind is at this period in the highest degree impressible. The infantile brain is soft and almost semi-fluid in its texture. The skull and coverings of the brain have acquired little of that density and firmness which they exhibit in later years. The brain may be molded into almost any shape. Deficient organs may be developed, exaggerated ones may be repressed by proper training: and it is equally possible by improper training to destroy utterly its symmetry by dwarfing well-developed and valuable faculties, and obliterating desirable traits of character, while developing those which are in the highest degree undesirable.

Education should begin with the earliest dawn of reason. The first evidences of mental activity on the part of the child should be watched for and met in such a manner as to insure a healthy development. It is possible, by giving careful attention to all the surroundings of the infant, and bestowing care upon every act in relation to it, on the part of the mother, to give direction to the development of its dawning mind, and thus to do much toward forming the character.

One of the most reprehensible of all perverting processes to which the minds of children are exposed, is the practice of talking "baby-talk" to them. Sometimes it requires years for individuals to unlearn the bad habits of pronunciation which they acquired

by this absurd practice, which also leads children to form bad habits of thought and expression. Those who have the care of children ought ever to bear in mind the fact that the perceptive faculties of small children are very active. As a rule, these little ones are in the highest degree imitative; every look, gesture, action of the nurse or mother, is followed with the closest scrutiny. Whatever is brought before the attention of the little one makes an image upon its soft and forming brain which is pretty sure to be reproduced, more or less modified, sometime in its future history. The nursery ought to be considered a sacred place; nothing perverting in its tendency should ever be allowed to enter its doors. The building of a brain, the formation of a character, is a work with which that of the most skillful sculptor cannot for a moment compare; yet how little attention is given to this important work. Children — little boys as well as little girls — are allowed to come up without any attempt to give proper or natural direction to their development.

A matter of great importance to the little girls and little boys alike is that they should be early taught to think. Women as a class are dependent. The majority of women want some one to do their thinking for them. Little girls should be taught to think by bringing objects calculated to stimulate thought to their attention, and by stimulating inquiry by carefully and patiently answering all their questions, and putting to them such questions as will call out thought and encourage further inquiry. This work, properly

done, will accomplish more toward the molding of character and the developing of valuable mental qualities in the first four or five years of life, than can be accomplished by the most skillful training during any subsequent period. The kindergarten is a most admirable institution which may be made the means of imparting most valuable instruction. A large amount of useful knowledge may be impressed upon the mind in such a manner that it cannot be forgotten, by the methods employed in the kindergarten. Moral as well as mental culture may be imparted in this way. We have been greatly pleased with the recent effort to employ the kindergarten as a means of impressing on the young mind the truths of temperance. We believe that here is a wide field of usefulness for this new educational system, and have no doubt that under the wise and inspiring influence of such talented and enthusiastic workers in the temperance cause as Miss Willard, Mrs. Foster, Mrs. Hunt, and others whom we might name, this agency will be made a means of incalculable good to the rising generation, especially in our large cities.

School Education. — When the little girl reaches an age at which it is thought proper to send her to school, other depraving influences are brought to bear upon her. While there has been great improvement in methods of education within the last quarter of a century, it is still an unfortunate fact that the school-life of the young, boys as well as girls, is to a large degree perverting in its character. Little ones are made to learn by rote. Instruction is imparted

in such a way that they are led to acquire knowledge very much like little parrots, and without much greater appreciation of what they learn. Little attention is given to the natural order in which the mental faculties should be developed, or the natural means by which young children acquire knowledge. A routine method is followed, the effect of which is to extinguish, to a large extent, the naturalness of those who are subjected to it. Reforms are in progress, however, and we trust the day is not far distant when school instruction will be made much more in conformity to the healthy development of the mind than at present.

Moral Culture of Children.—The cultivation of the moral faculties of the child cannot be begun too early. Depraving influences are so abundant and so certain to be brought in contact with the little one at a very early period in its existence, that the attempt to fortify the mind against such influences cannot be begun at too early a date. It is of the greatest importance that while the minds of children are yet impressible, such images of truth and purity should be formed upon them as cannot be easily effaced. Children ought early to be taught to love the right *because it is right*. The instinct of fear should seldom be appealed to, and never when such an appeal can be avoided. The dignity of truth, the nobility of purity, and reverence for nature and the God of nature, should be held up before the young mind as the highest possible incentives for right doing. A moral character founded upon such a basis will not be dis-

turbed by the "winds of doctrine" or the waves of unbelief; it is founded upon a rock which cannot be moved.

Senile Manners.—A most alarming, and, we may almost say, disgusting feature of the modern fashionable mode of bringing up children, is the encouragement which is given to the formation of senile manners. The question has been very pertinently asked, "What has become of all the little girls?" It certainly is not often now-a-days that we see a genuine little girl. There are plenty of little creatures dressed in such a marvelous manner that even a zoölogist might be puzzled to determine the species to which they belong, but there is very little in these fancifully dressed specimens, these human dolls, which should characterize the ideal little girl. A talented and observing lady has in the following words drawn a true picture of the contrast between the real and the artificial little girl:—

"In former times, a pretty muslin bonnet, or a simple, close-fitting cottage straw, was thought the most appropriate covering for a little head, protecting the bright eyes from too intense light, and shielding the rosy cheeks from the sun's too fervid kisses. But now we see *something* placed on the sunny curls, leaving eyes and cheeks entirely unprotected, which is elaborately trimmed with bows, feathers, a flower-garden, or perhaps a mingling of both; for although it is too small for even a good-sized doll, the milliner, with an ingenuity which would have been praise-worthy if exercised in a more sensible manner,

has contrived to pile up trimming enough to hide even the faintest suspicion of a bennet. But what is sadder than the lack of true taste and good common sense in this stylish affair, we see no semblance of child-like simplicity in the wearer. And the bonnet is but the beginning of this unfortunate change which we mourn. The pretty '*baby waist*,' the plain white dress, the neat muslin or merino, so appropriate, which little girls used to wear, are supplanted by incomprehensible garments, the fac-simile of the grand-dame's attire, flounces, fringes, bows, and double-skirts looped and festooned in an astounding manner; the child's — no, we mean the *young lady's* height, there are no *children* in these days — is less than her circumference, and the 'mite' who is made to carry such an incongruous burden, totters about on high-heeled boots. This tiny specimen of womanhood, hardly weaned from her mother's breast, or more probably, a wet-nurse's, shakes out her redundant robes, bending and twisting her small body in grotesque imitation of the woman spoken of by the prophet Isaiah 'with haughty mien; walking *and mincing as they go*.' See how the little ape looks over her shoulders, as she tottles about, to be sure that her skirts give her dress and figure the correct *wiggle* her sharp eyes have observed in the stylish mother and her fashionable friends. It is lamentable that all the simplicity and beauty of babyhood and childhood should be destroyed by fashion.

"Added to the absurdity of the dress, these little women attempt to discourse on the '*latest style*.'

With their companions or dolls you will hear them imitating the discussions on this subject that they daily hear in the parlor or nursery from their mother; or still imitating with contemptuous toss of their little heads, they will inform their listeners that they 'could n't think of 'sociating with those girls, because they are not *stylish*!'

"A few day since, as we passed out of a store on Broadway, our attention was arrested by the conversation of two little figures seated in a fine carriage, waiting, doubtless, for mamma to finish her shopping. They were dressed in a style positively overwhelming. Their hats were wonders of skill, their gloves had the orthodox number of buttons with bracelets over them, a dainty handkerchief suspended from a ring attached by a chain to another ring on the little doll-like fingers. The dress was simply indescribable. The elder was speaking to the younger, who, scarcely more than a baby, sat demurely by her side. 'Oh, mercy! just look at that horrid little girl who is crossing the street! She has no hoops on, and not a single flounce — no trimming at all on her dress! And, oh! see her gloves! — why, she has only one button! Pshaw! she's nobody — not a bit of style!'

"The youngest lisped a reply, which we lost as we passed on; but it was painful to think of the training they must have received which enabled them at that early age to judge a child of their own years so quickly by the rules of fashionable dress, and because her attire was not in exact accordance with that week's style, turn from her with contempt as something too low for their notice."

The above description of the fashionable little girl of to-day is not overdrawn; yet how few parents realize the dangers into which they are themselves leading their little daughters in fostering and stimulating this sad and unnatural inclination!

This terribly pernicious tendency is wholly the fault of the parents, who little realize the mischievous work they are doing, the sad harvest they are preparing to reap in later years. They are rearing their children like house-plants, forcing them to an unnatural growth, the result of which must be an early decay. As soon as exposed to the storms of adversity, they must quickly wither and fall.

Juvenile Parties.—Nothing could be more painful than the descriptions which we sometimes read in the papers, of children's parties. Some of them would be appropriate objects of ridicule, were it not for the painful disclosures they make of weakness and wickedness on the part of the parents and depravity on the part of their children. Some time ago a New York paper gave a graphic description of a children's party in Brooklyn. The writer told "of ravishing costumes of silks and satins and laces in most delicate and fashionable shades, all in the highest style of the modiste's art; of flashing diamonds and milky pearls in tiny ears and on slender necks; of six-buttoned white kid gloves on lilliputian hands, barred with massive bracelets of 'the real stuff,' as one midget of nine years proudly asserted; of twinkling feet encased in French boots matching the dresses in color; of dazzling lights and fragrant flowers; of bewitching music and circling dances; of

flirtations and a midnight supper with its indigestibles, its ices, and its wines."

Such parties are not confined to Brooklyn nor to the large cities; we hear of them in all parts of the country, and their legitimate result is seen in the petty insubordination of children not yet in their teens, in juvenile flirtations which result in elopements of boys and girls, and in all sorts of social scandals.

The natural simplicity and sincerity of childhood is a precious trait which should be fostered and preserved. Hypocrisy and sham, notwithstanding their prevalence in the fashionable society of the day, are always distasteful to a person of pure mind and unperverted instincts, but never so much so as when exhibited in children. Genuineness of character has come to be a rare trait to both old and young. The little girl does not reach her teens, scarcely, in fact, learns to talk, before she begins to acquire the art of trying to appear somewhat different than she is, imitating the example of her elders, who possibly imagine that their shoddy gentility passes for the genuine article, when in fact they are the laughing-stock of all their acquaintances.

The Clothing of Little Girls. — As a rule, mothers exercise excellent sense in the clothing of their little boys: their limbs are warmly clad, their feet protected from the cold, and their garments are so constructed as to allow freedom of motion to their limbs. Thus protected, they are usually allowed to romp and play in the open air, gathering health and strength, and laying the foundation of a constitution

which will be able to bear the wear and tear of later years. Why should not little girls be as comfortably and sensibly clothed as little boys? Why should fashion insist that the "weaker vessel," even in her tenderest years, should be clothed in such a manner as would be considered culpable neglect on the part of the mother if the child were a boy instead of a girl? How often have we seen fashionable mothers leading along the street shivering little girls whose lower extremities were so thinly clad as to be scarcely protected from the gaze of the passers-by, to say nothing of the piercing winds against which the mother was protected, at least in part, by her long skirts, thick boots, woolen stockings, warm drawers, and leggins. The upper portion of the body is usually protected by furs, warm cloaks, and mittens or muff, but not infrequently we have seen little ones trotting along beside their mothers with their little limbs plainly in sight, blue and pinched by the cold, — their short skirts no protection to the portion of the leg below the knee, and the thin drawers that scarcely met the top of the stocking no adequate protection for the limbs. The stockings, too, are often of the thinnest material to allow the wearing of as small a shoe as possible.

Is it any wonder that these little ones so often sicken and die? Who knows how many consumptions originate in colds contracted by these exposures in early childhood? This style of dressing is without doubt responsible for the great share of croups, diphtherias, and other throat and bronchial troubles to which children are subject in early life. Diseases of

the lungs and air-passages are vastly more frequent in young children than in older persons; and we doubt not that the culpable carelessness and senseless obedience to fashion in the manner of clothing them is in a large degree responsible. In more than one instance we have known mothers called to mourn the death of their beloved little ones when we very well knew that the responsibility was their own. The minister offered consolation in the thought that the ways of Providence were mysterious, and that perhaps the good Father had taken the little one to himself for some wise purpose which eternity might reveal. Possibly the mother accepted the consolation with the thought that the little one was really better off, being delivered from all the trials and hardships of life and safe with reference to the future. We confess to have felt our indignation roused when hearing such sentiments as these expressed. Providence has nothing to do with the killing of little children. Fashion is the modern Herod that slaughters the brightest, fairest, and most promising of our little ones without compunction. Little girls seem to be her favorite victims. Children have a right to live, to develop, to enjoy this life as well as the next. In fact we can scarcely understand how the true fullness of joy can be reached in the next world in any other way than through the experience afforded in this. There are joys and legitimate pleasures and happiness in this world which make the present life well worth living. We insist that girls as well as boys have an inalienable right to live, and the mother who sacrifices the life of her child by bending her knee to the goddess of fashion

is as culpable as she who commits her little one to the merciless waves of the Ganges, or dashes it beneath the cruel wheels of Juggernaut.

The little girl should be so clad that every portion of her body will be thoroughly protected. The arms and limbs should be as well protected as the trunk. In order to secure this equable protection of the body, the undergarments should be made in one piece, that is, the chemise and drawers should be united. The undergarments should be of flannel, the best material for children's wear at all seasons of the year, thick flannel being worn in the winter, and in the summer time the thinnest woolen fabrics, if the weather is very hot. Children often complain that flannel irritates their sensitive skins. This difficulty can be obviated by wearing thin gauze suits underneath the flannel garment. The stockings should always be of wool except in very warm weather. They should never be supported by garters, but should be suspended from the shoulders by means of elastic straps either passing over the shoulders or attached to the undergarment.

In cold weather, high boots with thick soles should be worn, and should be supplemented with warm, knit leggins extending above the knees.

Short-sleeved and low-necked dresses are fortunately just now out of style, so we need not say much with reference to this abominable mode of dressing children which has been so long in vogue. It must have a passing notice, however, as the fickle dame may soon return to her old folly, and insist that the arms and bosoms of children shall be exposed at all

seasons of the year regardless of the pernicious effect of such exposure upon their delicate constitutions. The upper part of the trunk contains the heart and lungs,—two of the most important vital organs. Chilling of this portion of the body is certain to result disastrously to health. There is no doubt that many of the weakly, sickly, consumptive girls of the present generation owe their feeble condition to the low-necked, short-sleeved dresses which they wore in childhood.

We are glad to know that mothers are becoming more sensible in this matter. It is now not an uncommon thing to see upon the streets a little girl who is warmly and sensibly clad. We hope that this course on the part of some mothers will be contagious, so that we may have a thorough-going revolution in the dress of little girls.

Stays, corsets, and French heels are instruments of torture to which no intelligent mother will subject her growing daughter. The idea that the clothing of the little girl must be so constructed as to “develop a nice form” is an intolerable reproach on the Creator. It is a rare thing now-a-days, at least in large cities, to find a young lady who can walk in an easy, graceful manner. The stiff, unnatural, mincing gait of the fashionable young lady is not so much an affectation as a necessity with her. Her physical development has been so sadly deformed by the unnatural compression of the waist with stays or corsets, by the curving of the spine through the wearing of shoes with high heels placed under the instep instead of under the heel, and by various other deforming processes, that

an easy, natural, graceful bearing is as impossible for her as for a man with heavy manacles upon his ankles. She struts or wriggles and minces along in the most ridiculous fashion, not because she desires to do so, but because it is impossible for her to walk in any other way. But we will not delay longer upon this point here, as it will be more fully considered hereafter.

A point of primary importance in regard to the clothing of children which mothers should ever bear in mind is the fact that frequent changes are necessitated by the almost constant changes of temperature in this climate. The weather of a temperate climate is always subject to changes which will be recognized, and should be as far as possible anticipated, by the careful mother. Children possess very little power to resist the influence of cold or heat. Their vital functions, while very active, are more easily disturbed than those of older people, hence they are more susceptible to injury from change of weather than older persons. Mothers should be constantly on the lookout for changes which may involve the life of their little ones. The fashion of putting on flannel undergarments at the beginning of the cold season of the year, and putting them off again in the beginning of spring, is a pernicious one. There is no time of year when flannel clothing is more imperiously required than in the cool, damp days of spring and the occasional cool days in summer. Clothing should be adjusted to the weather of each day independently. In the winter time, an unusually cold day demands an additional supply of clothing. In the summer time, an unusually hot day may require an opposite change of

garments. In the spring and autumn, particularly when the weather is very changeable, it may be necessary to change the clothing two or three times a day in order to meet the exigencies of the weather.

Children should never be allowed to suffer for the want of a change of this kind simply because the needed garment has been soiled or must be saved for Sunday wear, or for any other trivial reason. If a child cannot be properly clothed, it should be sent to bed and kept there until the proper garments can be provided for it. The excuse which mothers often make for carelessness in this particular, "that they have been too busy" to make the necessary garments for the little one who has outgrown its old clothing, is no justification for such neglect; and it will generally be found that the required time has been worse than wasted in the preparation of unwholesome dishes which will have no other influence than to deprave the tastes and undermine the health of the husband and child, or in the entertainment of fashionable friends who are themselves squandering valuable time which belongs properly to their children, in the discussion of the latest fashions or the most recent scandal.

The clothing of the child at night is also a matter of importance. As a rule, flannel night-gowns should be worn, as by this means the little one avoids the chill often given by coming in contact with cotton or linen sheets, and is better protected from the chilly night air if, as is often the case, it becomes uncovered in the night by the displacement of the bed covers through its restlessness.

Exercise.—The idea that little girls must be kept in the house and never allowed to romp and play out of doors as do their brothers, is productive of a vast amount of mischief to health. There is no more reason why little girls should be treated this way than for the treatment of little boys in the same manner. As previously remarked, during the first years of their existence until the approach of puberty, girls and boys are very much alike in their physical development, and there is no reason why they should not receive very much the same treatment. The muscles and bones cannot be developed in any other way than by physical exercise, and this cannot well be done with the proper freedom elsewhere than in the open air. The play-room or family gymnasium is an excellent thing for use on rainy days and in inclement weather; but there is no means by which a good foundation for physical health and a normal development can be so well laid as by abundant exercise in the open air. The disposition which most healthy little girls exhibit to romp and play with their little brothers should not be repressed unless carried to great excess. A little girl with the steady and sober manners of an old person, while often pointed out as a model of decorum, is really a monstrosity. Such a girl lacks something in her mental or moral composition, and will be likely to be still more lacking in the physical endurance requisite to meet the emergencies of mature womanhood, which can only be secured by proper development of the physical organism in childhood and early youth.

Girls as well as boys should be early taught to be

useful. In many kinds of work they may find the most healthful of all kinds of exercise. The various movements required in the process of "putting a room in order," clearing off the table, washing or wiping dishes, running errands, replenishing the fire, and in various other household duties, afford almost as good an opportunity for the exercise and development of muscles as the most complicated maneuvers of systematic calisthenics in a gymnasium. For girls who do not have an opportunity to engage in light household duties, gymnastic exercises of various sorts, a few of which are shown on Plate XI, are exceedingly useful, and should be employed daily. Every family ought to have its gymnasium, where its little ones can find ample opportunity for healthful exercise in all weathers and at all seasons of the year.

Little girls should be early taught the dignity of work. They should be made to understand that their lives, if successful, must be lives of usefulness. Nothing can be more damaging to the mental and moral development of a little girl than the common custom of making her a household pet. We do not say that children should not receive kind attentions from older persons, and be made to see that they are beloved and respected by their superiors; but the common habit of humoring and petting children, especially little girls, is in the highest degree detrimental to their proper development and usefulness in future life.

Another common custom, very damaging in character, is that of "coddling" little children. Very careful mothers, in their anxiety for their daughters,



PLATE XI.—LIGHT GYMNASTICS.

frequently keep them too close in-doors, hovering about the fire, or pent up in furnace-heated rooms from which the vivifying air of heaven and the reviving sunshine are rigorously excluded. Such children grow up like sickly plants in a cellar or a coal-mine. It is no wonder that their cheeks are pale, their lips bloodless, their eyes lusterless or lighted by an unearthly brightness, and their constitutions so weak as to be the easy prey of disease. We do not advise that children should be exposed in a careless or unreasonable manner, but they should be inured to exposure sufficiently to prevent an unnatural susceptibility to injury from slight changes.* The man who obliged his child to run through the ice and snow of winter with unprotected feet, carried this idea to a very great extreme; but the danger to the lives and health of children through such extreme and cruel treatment is by no means so great as that incurred by the mode of treatment to which children are often subjected by their over-anxious mothers.

Rest and Sleep.—Children require much more sleep than older people. An infant does little more during the first weeks of its existence than to eat and sleep. This is very natural, since the greater part of the process of growth and repair takes place during the hours of sleep. During the waking hours the vital functions are occupied in the expenditure of energy through the activity of the muscular and nervous systems; but during sleep, these activities cease, and processes of growth and repair are carried on with great vigor. This is true to some extent with plants as well as animals. During the day, the plant

is occupied with receiving food and elaborating it into nutritive materials by which its sap is enriched, and during the night the new material received through the day is organized into cells and formed into the tissues of the growing plant. It is of great importance then that children should be allowed ample time for sleep. For a child eight or ten years of age, ten hours of sleep is none too much. Children should be taught to go early to bed and should not be awakened in the morning so long as they are sleeping soundly, but a child should never be allowed to lie long in bed after waking.

Great care should be taken that the children's conditions during sleep shall be such as are conducive to health. The sleeping-room should be well ventilated. The vital activities of children are very great, and they throw off from their bodies in a given time a much larger proportion of organic impurities than do older persons. Hence, the same provision for a supply of fresh air should be made for a child as for an adult. The air of the sleeping apartment should be so changed that it cannot acquire the peculiar fusty odor by which such apartments are generally characterized, and which, although not observable to the inmates while occupying them, is readily detected by a person coming in from the fresh air outside.

Care should also be taken that children are warmly covered at night. Violent colds are frequently contracted by children in consequence of insufficient covering during sleep. The sleep of children is so sound that the little one will not be awakened by a degree

of cold which would readily awaken an older person sleeping less soundly. Changes of temperature at night often result seriously to a child which may have been properly covered at bed-time but is not protected from the greater degree of cold to which it is subjected during a subsequent portion of the night. To provide against such emergencies, an extra cover should always be provided at hand, and during seasons of the year when sudden changes are liable to take place at night, young children should be looked after at least once during the night to see that they are properly covered. Children are also frequently restless through dreams, usually the result of indigestion, late suppers, or the irritation of worms. This also necessitates their being looked after during the night to re-adjust displaced clothing.

Equal care should be exercised to avoid covering the child too warmly. As a rule, heavy "quilts" should not be used as coverings for children, and indeed it would be better to avoid their use as bed-coverings altogether. Woolen blankets are far more healthful, since they furnish an equal degree of warmth with much less weight than the old-fashioned comfortable.

The nature of the material on which the child lies, as well as that with which it is covered, is also a matter of importance. We advise that feathers be discarded altogether. They are objectionable on many accounts. Their animal origin gives them in a high degree the property of absorption, so that they readily take up and retain the exhalations of the body and whatever impurities may be brought in contact with

them. It is true that feathers may be renovated, but this process is seldom resorted to more than once a year, and frequently the feather-bed passes down uncleaned from generation to generation, adding yearly to its accumulation of impurities. The susceptible systems of children may be readily injured by contact with this source of impurities. We well recollect when a child, visiting away from home, having been made very sick upon several occasions by being put to bed on one of these reservoirs of filth. Feathers are also objectionable on account of their heating property. The body settles into the yielding mass in such a way as to be half buried in it. Feathers are very poor conductors of heat, and consequently a child, if none too warm when first put to bed, by the accumulation of heat is very certain to become very warm after an hour or two. Perspiration being induced, the little one becomes restless, and kicks off the covering, exposing itself to the cold air, which suddenly checks perspiration, thus occasioning a severe cold.

A word should be said respecting the sleeping of children with older people. We have no faith in the popular notion that one person may attract vitality from another in a mysterious way, and would not suggest that children may be injured from any such cause. We have no idea that any injury whatever can come to a child from sleeping with a healthy adult; but the susceptible constitutions of children may be injured by sleeping with an invalid or an elderly person with enfeebled constitution, through the absorption of effete materials thrown off by its

invalid or aged and infirm companion. The custom of placing a child between two adult persons is one which should be condemned. A child so circumstanced is often in the highest degree uncomfortable. If the face of each of its companions happens to be turned toward it, it may have to lie for hours breathing air grossly contaminated by the exhalations of its bed-fellows. Very often, also, a child sleeping with elder persons becomes covered with the bed-clothing in such a way that it breathes over and over the air charged with the products of its own respiration and the exhalations of its companions. Death not infrequently results in this way. Sometimes, also, in the case of small infants, death has resulted by the little one's being "overlaid" by one of its parents, most frequently the mother.

We also object to allowing children of the opposite sex to sleep together, at least after the very earliest years of infancy are passed. We have in mind examples where children of both sexes have been injured for life by promiscuous sleeping. Little girls are very seldom allowed to sleep with older brothers, but the contrary arrangement is a very frequent custom, and should be condemned. Children who are properly brought up will seldom be afraid to sleep alone. The infant may be accustomed to sleeping by itself from its earliest childhood, and if it is never injured by frightful stories of ghosts and hobgoblins, it will never think of being afraid of the dark, or consider a bed companion necessary.

Diet.—The health of children is to a much greater degree dependent upon their food than is generally

supposed. The popular notion seems to be that little ones should be allowed to eat what they crave and whenever they please. This is a very mischievous practice, and results in weakening their digestive organs at a very early age. Candies, nuts, sweet-meats, and "knick-knacks" generally, are exceedingly harmful, and should never be allowed children at any age. Their digestive organs are not as strong as those of older persons, and will not bear the amount of abuse which those of their parents endure with impunity.

The diet of children should be simple in character. It should consist chiefly of fruits and grains with plenty of milk. Eggs should be sparingly used and meat would better be discarded altogether. Condiments, such as pepper, vinegar, pepper-sauce, mustard, and other stimulating articles of diet, should be wholly interdicted. The use of tea and coffee is another practice which should be discountenanced in the young as well as in older persons. The use of stimulating articles of diet not only weakens the digestive organs, but develops those parts of the system which would better be restrained.

Fine-flour bread is another article of diet the general use of which has been in the highest degree detrimental to children by interfering with their normal development. Grain from which the coarse parts have been removed does not contain the requisite amount of bone and muscle building material. Such food is fattening, but not strengthening. Graham bread, cracked wheat, oatmeal, and other whole-meal preparations, are in the highest degree wholesome, and are especially adapted to the wants of the grow-

ing child. The taste of these articles, if not naturally possessed by the child, should be early cultivated.

A child brought up on "knick-knacks" is never a healthy child. The large use of sweets is sure to result in some sort of dyspepsia sooner or later. Candies should be discarded altogether, not only as furnishing an unnecessary amount of saccharine material, but on account of the fact that they contain many injurious articles employed for flavoring and coloring purposes. The public should also know that such a thing as pure candy, that is, candy made from genuine cane-sugar, does not exist. Candy is universally adulterated. Glucose, or "corn-sugar," is almost exclusively used in the manufacture of all kinds of candy.

The habit of eating fruits, nuts, sweet-meats, etc., between meals, is in the highest degree pernicious and detrimental to the health of the child. When it is considered how universal is the custom of allowing children to indulge in sweet-meats, pastry, and tidbits of every description without restraint, it is not to be wondered at that infantile dyspeptics are becoming exceedingly common. Great regularity in meals should be observed from the very beginning of infant life. After the first years of infancy, the child should be strictly confined to three regular meals a day, and the last meal should not be taken less than two and one-half hours before retiring. The child should not be allowed to taste a mouthful between meals. The habit of eating between meals when early acquired, becomes as inveterate and difficult to

break as that of tobacco-using or liquor-drinking. A short time ago, we heard a confirmed dyspeptic confess that he had experienced greater difficulty in breaking off the habit of taking sugar between meals than in discontinuing the use of tobacco, although he had been an inveterate user of the weed for years.

Regular Habits.—A variety of diseases very grave and sometimes incurable in character arise from the habit of inattention to the call of nature to relieve the bowels and bladder. The habit of inattention to this important duty to the body is often formed in early childhood. This is the case especially with girls. Mothers ought to give attention to this matter and instruct their daughters respecting the importance of regularly relieving the bowels and bladder at certain times each day. The call of nature should never be resisted or delayed a moment when such delay can be avoided. The inactive condition of the bowels, and the irritable state of the bladder which often result from the violation of this simple rule of health are not infrequently the means of inducing abnormal excitement in the genital organs which may result in the formation of habits most deplorable in their character and consequences.

Vicious Habits.—Many mothers are wholly ignorant of the almost universal prevalence of secret vice, or self-abuse, among the young. It is exceedingly common among girls as well as boys. The nature of this vice is such that it may be acquired and continued months and even years, possibly during the greater part of a life-time, without its existence being suspected by those who are not skilled

in its detection. We have met scores of such cases in which it was impossible to convince the doting mother that her daughter could be guilty of such an offense, although the marks of vice were too plain to be mistaken. A careful study of this too prevalent vice and a wide opportunity for observation have convinced us that this is one of the great causes of the large increase of nervous diseases and diseases peculiar to the sex, which has been so marked among women during the last half century. A pungent writer who has devoted himself almost exclusively to the treatment of the diseases of females, asks pertinently : "Why hesitate to say firmly and without quibble that personal abuse lies at the root of much of the feebleness, paleness, nervousness, and good-for-nothingness of the entire community?"

In the last twenty years we have examined and treated for various local ailments the cases of several thousand women of various ages, and more often than we have dared to declare have we found convincing evidence that the foundation of the disease from which the patient was suffering had been laid in vicious habits acquired in early childhood.

This vice is not confined to any one class of society : it penetrates all classes. Those whose social surroundings have been such that they would be least suspected, are frequently found to be among its most abject victims. Too little attention has been given to this matter. Certain writers have taken the position that the prevalence of the vice has been greatly exaggerated as well as its bad effects, which has had a tendency to lull to sleep parents who

might otherwise have realized the dangers with which their daughters as well as their sons were threatened.

Mothers place their daughters in boarding schools which enjoy a good reputation as successful and respectable schools, and imagine that they are safe; when their associations are such that if they escape contamination with this foul vice it is to be regarded as almost a miracle. It is not to be supposed that all girls are corrupt, or that most of those who are the inmates of boarding schools are so; but it is scarcely possible that a large number of girls can be brought together without including at least a few who have been corrupted by this evil habit; and one or two of these emissaries of evil are sufficient to contaminate any number of others.

Teachers as well as parents ought to inform themselves on this subject so that they may be prepared to rescue those who may have become enslaved, and protect those whose innocence has not yet been marred.

Effects of Solitary Vice in Girls.—The victim of this evil habit is certain to suffer sooner or later the penalty which nature invariably inflicts upon those who transgress her laws. Every law of nature is enforced by an inexorable penalty. This is emphatically true respecting the laws which relate to the sexual organs. The infliction of the penalty may be somewhat delayed, but it will surely come, sooner or later. The girl who begins the habit in early childhood will scarcely escape great suffering from some form of sexual disorder as she approaches

womanhood, at the period of puberty, and her sufferings will not end here. All through life the penalty of unlawful transgression will be visited upon her. If she becomes a wife and mother, the perils incident to that condition will be vastly increased.

In the majority of cases, the effects of secret vice soon begin to manifest themselves in a variety of ways which are easily recognized by the experienced physician, and may often be detected by others. How often have we seen little girls who at the age of five or six years were pictures of blooming health, with faces indicative of purity and all the elements which when developed contribute to the formation of perfect womanhood,—how often, we say, have we seen such lovely little ones fading away under the influence of some terrible blight of the nature of which their friends were wholly ignorant. From month to month we have seen the roses leave their cheeks, the lustre depart from their eyes, the elasticity from their step, the glow of health and purity from their faces, while with the gradual departure, one by one, of their charms, came, instead, the convincing evidences of the vicious habit, undermining both their constitution and their character, and working devastation which the lapse of long years could not efface. The mother often notices these changes in her daughter with other changes which we might mention, and wonders what can be the cause for such remarkable evidences of deterioration. Perhaps it is attributed to some trivial cause which has had little or no influence in effecting the change, but the real cause is usually overlooked. As a rule, mothers will not believe it

possible that their daughters can be guilty of a vice which they are forced to believe is common enough among the daughters of their friends, and often cannot be induced to institute a thorough-going investigation, when the need of it is plainly evident to an unbiased observer.

Wide observation has convinced us that a great many of the back-aches, side-aches, and other aches and pains of which girls complain, are attributable to this injurious habit. Tenderness of the spine, giving rise to grave fears of spinal disease, is not an infrequent result. Much of the nervousness, hysteria, neuralgia, and general worthlessness of the girls of the rising generation, originates in this cause alone. The pale cheeks, hollow eyes, expressionless countenances, and languid air of many school-girls, which are likely to be attributed to overstudy, are due to this one cause. We know of no means by which the vitality can be so quickly lowered and the very foundations of the constitution sapped, as by this. The continuance of the habit for only a few years is sufficient to lay the foundation for suffering through the whole future life.

The period of puberty is one at which thousands of girls break down in health. One great cause of this alarming decline at this period is undoubtedly that which we have mentioned. At this time unusual demands are made on the system; and the constitution, already weakened by a debilitating, debasing vice, is not prepared for the unusual strain, and the poor victim drops into a premature grave. In most of these cases, the sudden failure is attributed

to overwork, overstudy, a slight exposure, or some other cause by no means sufficient to account for the observed results.

Signs of Self-Abuse in Girls. — Mothers should always be on the alert to detect the first evidences of this vice in their daughters. It is especially important that it should be detected at the start, as the habit when once formed so completely subjects its victim as to make escape well-nigh impossible. It fastens its fetters so firmly that, in some instances, nothing but almighty power seems competent to loosen its grasp. It is by no means easy to detect the habit in those who are addicted to it. The evidences may be such as to convince the watchful mother or experienced physicians, but it will be necessary in most cases to obtain undoubted evidences of the existence of the habit before it can be broken up. Girls will almost uniformly deny very emphatically that they are addicted to the vice, when they are truthful on every other subject. We have found this to be the case much more frequently with girls than with boys. Hence, it requires the greatest care and watchfulness in most cases to obtain such evidence of the vice as will render mistake impossible. The only positive evidence is, of course, detection of the child in the act. If the child is observed to visit some secluded spot daily or more or less frequently, or to be much alone, avoiding the company of other girls of her age, her actions should be carefully watched, and means taken to detect her in the act. The habit is often pursued at night after retiring, or in the morning after awakening, before getting

up. Not infrequently we have known children to be pursuing this soul-and-body-destroying vice while their parents supposed them to be quietly slumbering in healthy innocence. Children sometimes feign sleep to afford them an opportunity to practice this vile but fascinating indulgence. A suspected child should be watched under all circumstances with unceasing vigilance.

It is not enough to have such a child under observation in a general way. A most vigilant surveillance must be kept up constantly, and during the night as well as during the day. No dependence can be placed upon the statements made by the victims of this vice, for the moral nature soon becomes depraved to such a degree that conscience is easily silenced.

Aside from positive evidence, there are other signs which may well give rise to suspicion which may lead to the discovery of positive evidence. These may be enumerated as follows:—

1. A sudden, marked decline in health. A change of this kind in a girl who has previously been healthy and has been subject to no influences adequate to produce such a change may well be regarded with suspicion and should be closely watched. Mothers will often find upon a careful investigation of such cases a depth of depravity for which they are wholly unprepared.

2. A marked change in disposition is frequently the result of this same cause. When a girl who has formerly been truthful, happy, obliging, gentle, and confiding, becomes within a short period of time

peevish, irritable, morose, disobedient, and restrained in her manner, it is evident that she is under the influence of some foul blight, and the one which we have described is the one of all others the most frequent. Such a change in disposition should arouse the mother's most earnest solicitude and lead to a thorough investigation of the habits of the child.

3. Loss of memory and of the love for study is a very frequent result of this enervating habit. The nervous forces are weakened and the vitality lowered to such a degree that the natural energy and vivacity are destroyed, giving place to mental weakness and inactivity.

4. Unnatural boldness in a little girl who has previously been retiring and reserved, if not bashful, is evidence of some deep-seated cause which affects the character, and is just ground for the suspicion of secret vice.

5. A forward or loose manner in company with little boys is suspicious conduct, especially in one who has previously shown no disposition of this sort. Girls addicted to this habit usually show an unnatural fondness for the society of little boys, and not infrequently are guilty of the most wanton conduct.

6. Languor and lassitude appearing in a little girl who has previously possessed a marked degree of activity and energy, should give rise to earnest solicitude on the part of the mother for the physical and moral condition of her child.

7. An unnatural appetite is another indication of the existence of this habit. This peculiarity is manifested in a great variety of ways. Sometimes

children will show an excessive fondness for mustard, pepper, vinegar, spices, and other stimulating condiments. Little girls who are very fond of cloves and desire to be always eating them are likely to be depraved in other respects. Such girls are also often very fond of eating clay, slate, chalk, charcoal, and other indigestible substances. We have met persons who were in the habit of eating large quantities of these articles daily.

8. The presence of leucorrhœa in a young girl accompanied by a relaxed condition of the vagina, is presumptive evidence of the existence of this vice, if there is no other cause to which this unnatural condition can be attributed. We have met girls who had scarcely entered their teens in whom the relaxation was almost as great as if they had been the mothers of children. This condition very readily results from the practice of self-abuse, which occasions a frequently recurring congestion of the parts, together with the mechanical irritation accompanying the habit.

9. Ulceration about the roots of the nails, especially affecting one or both of the first two fingers of the hand, usually the right hand, is an evidence of the habit which depends upon the one just mentioned, the irritation of the fingers being occasioned by the acrid vaginal discharge.

10. Biting the finger-nails is a habit, which, when very marked, may be regarded with some degree of suspicion. The irritation of the fingers which gives rise to the habit, growing out of the irritable condition of the nails described in the preceding paragraph.

11. The expression of the eyes often betrays to the careful observer the existence of this deteriorating vice. The blank, dull, lustreless, expressionless eye, surrounded by a dark ring, habitually given to staring into vacancy, frequently tells the tale of sin which its possessor vainly imagines to be unknown to any but herself.

12. Palpitation of the heart, hysteria, nervousness, St. Vitus' dance, epilepsy, and other marked nervous symptoms occurring in children who have been previously healthy and have been subject to no other causes adequate to produce such results, are good grounds for suspicion. Incontinence of urine, giving rise to wetting the bed, is a common result of masturbation, and when present calls for careful investigation of the habits of the child.

It should be remarked that none of the above-mentioned suspicious signs when taken alone is sufficient evidence to warrant the conviction of a girl of this soul-destroying vice, but several taken together may form a chain of evidence sufficiently strong to be considered positive.

Evil Associations.—It is well that mothers should thoroughly inform themselves respecting the various channels through which their daughters may become contaminated. The majority of mothers are either sadly ignorant of the dangers to which their daughters are exposed, or are asleep with reference to them. We earnestly desire to say something that will arouse mothers from their apathy respecting the dangers that their daughters are subject to almost from early infancy.

That "evil communications corrupt good manners" is as true at the present day as when the words were penned by the inspired writer. The vice to which we have called attention is almost always acquired through the influence of evil associations. On this account, mothers should be exceedingly careful of the associations of their daughters. Little girls should never be allowed to go away to spend the night or to sleep with other girls, either of their own age or much older, whose characters are not known to be above suspicion. Many times persons who would not be suspected of such a crime, are in fact not only guilty of the vice themselves, but ready to lead others to the same degradation. Servant-girls often teach the habit to young children as a means of quieting them. Girls not infrequently learn the habit in school. There is probably not a public school in the land where there are not one or more instructors in this debasing vice. Sometimes vile boys, taking advantage of the unsuspecting innocence and simplicity of girls of tender years, give them their first lessons in this most degrading vice.

In a case which came under our observation a few years ago a little girl, naturally bright and unusually attractive and intelligent, had become the victim of this soul-and-body-destroying habit, which had brought on a serious nervous disease that threatened to destroy both body and mind before she had reached the age of ten years. Her first instruction was received from a hoary-headed fiend in human shape who had enticed her to a secluded place, and there introduced her to all the nastiness which his depraved and

sensual nature could devise. That a mature human being could ever descend to such immeasurable depths of infamy as this, is almost beyond belief; yet the facts are too well attested to be doubted.

Mothers cannot be too careful of the associations of their little daughters. Often those who would be least suspected of such wickedness are the agents of sin who will instruct their innocent little ones in this debasing habit. Trust no one not known to be pure. Keep your little girls under your own roof until you are sure that their characters are sufficiently well formed to resist the encroachments of evil. Build up bulwarks against vice by developing the pure and the good in their dispositions and repressing evil tendencies. The first impure thought instilled into a child's mind is usually the source of all the subsequent ruin. A prurient curiosity is excited which craves satisfaction, and will not rest until the desired information is obtained. Thus the evil seed germinates and develops, and in due time, under ordinary circumstances, brings forth an abundant crop of impure ideas which fill the mind and result in impure acts. A child whose mind has been contaminated by evil communications may be rescued, but cannot be restored to the innocence which when once lost is gone forever. A scar will always remain which cannot be effaced. Our observation has been that the cases of vicious depravity in young women are almost exclusively confined to those whose minds have been corrupted in early childhood so that their evil tendencies have grown and strengthened with their years. This fact accounts for the great difficulty of

reforming young women who have once fully entered upon a life of shame.

Bad Books.—By bad books we do not mean those included under the head of obscene literature. The active efforts of Mr. Anthony Comstock for several years past have resulted in the suppression of the greater part if not the whole of this class of literature, but we refer to a class of books not generally recognized as so very bad in character. Mr. Comstock has only succeeded in suppressing the publication of those works which are ostensibly vile in character and vicious in purpose. In this he has done a most excellent work, and his labors have undoubtedly resulted in saving thousands of young men and women from ruin; but there is a large and growing class of literature which his efforts do not and cannot reach. We refer to books written by men and women whose sole object is gain, and who do not hesitate to introduce in one way or another ideas which tend in exactly the same direction as the class of books which are pronounced illegal, and are suppressed wherever found by authorized agents of the government. Often these prurient, sensual ideas are presented in the most refined and elegant language, and interwoven with other thoughts which may be in themselves elevating, in such a manner that the intent of the writer may be wholly disguised to many persons, and the real character of the book not discoverable without the most careful scrutiny, by a person whose taste is unvitiated by familiarity with vice, and whose intuitions are in harmony with what is pure and ennobling in character.

It is not always the direct object of these writers to corrupt the morals of their readers. They recognize the fact, however, that a very large class of readers have an intense relish for works which give here and there hints of dark intrigues, illicit amours, and other manifestations of sensuality, and introduce this class of ideas as a sort of spice by which to render their productions palatable to the depraved taste of a large proportion of the novel-reading public of the present day. Never was there a time when books were so plentiful or cheap as now. The competition of great publishing houses has brought books of every sort within the reach of persons of all classes, and a dime to-day will buy more reading-matter than a dollar half a century ago.

Within a generation, a special class of literature has sprung up known by the general term of "Sunday-school books." The supposed characteristics of these books are wholesome thought, freedom from immoral tendencies, and the inculcation of pure and elevating principles. Unfortunately, many books even of this class are, from our stand-point, wholly unsuitable to be read by young girls, if indeed they are suitable to be read by anybody. The fact that a book is a "Sunday-school" book should not be sufficient recommendation to a mother who desires to preserve the simple-hearted purity of her daughter. Every mother should scrutinize with the greatest care the reading matter supplied to her daughter at Sunday-school or day-school, from the town library, circulating libraries, or libraries of friends. From whatever source a book or paper or magazine comes, it should

be carefully examined before being placed in the hands of a little girl old enough to read and comprehend its meaning. We once took from the hands of a little girl a book over which she had been bending for hours, and found on the open page sentiments which made our cheeks tingle with shame that authors could be so lost to the interests of purity and virtue and so reckless of results as to pen such sentiments as we found expressed so plainly that even a young and unsophisticated school-girl could not fail to comprehend the import of the language.

In our opinion, sentimental literature, whether impure in its subject matter or not, has a direct tendency in the direction of impurity. The stimulation of the emotional nature, the instilling of sentimental ideas into the minds of young girls, has a tendency to develop the passions prematurely, and to turn the thoughts into a channel which leads in the direction of the formation of vicious habits.

Various Causes of Vice.—Among other causes which operate to produce a tendency to the vice under consideration in the early years of girlhood, may be mentioned bad diet. The use of mustard, pepper-sauce, pepper, vinegar, spices, and highly seasoned and stimulating dishes and articles of diet of every description, has a marked tendency to the production of an abnormal development of the passions, sometimes undoubtedly stimulating the sexual organs to such a degree as to occasion a spontaneous formation of the habit. We have known instances in which this has been the case, the habit being acquired accidentally, without the aid of an instructor.

Sometimes this abnormal condition of the genitals is produced by local disease, causing an irritable or itching condition by which the child's attention is called to this part of the body in such a way as to lead to the discovery of the awful secret. Intestinal worms, a constipated condition of the bowels, certain forms of skin disease affecting the parts, are all causes which may result in the accidental formation of the habit of self-abuse.

Another cause which we shall mention, one which we believe has been generally overlooked, is the improper dressing of infants. It is a custom with most mothers and nurses during the early years of infancy to envelop that portion of the body of the infant in which the genitals are located, in many folds of diapers for the purpose of avoiding the necessity for frequent change. Sometimes this thick mass of material is still further augmented by a covering of oiled silk or rubber. The effect of this practice is to retain the moisture of the excretions in contact with this delicate portion of the system, which, with the heat accumulated from the body, acts like a poultice, stimulating and irritating the nerves of the parts, and thus inducing an abnormally sensitive and excitable condition. We have no doubt but that this unwholesome practice on the part of mothers is a very great cause not only of the early formation of the destructive vice, but also of serious disease in future life. Mothers should wisely consider this matter before allowing themselves to subject their little ones to such an unwholesome practice, and one which would seem to be directly contrary to the dictates of com-

mon sense respecting the requirements of cleanliness. The diaper should consist of as few folds as possible, and should never be covered by anything impervious to air. The child's clothing should be changed as often as necessary, which is as often as it is soiled, or as soon as possible after.

Silly letter writing in which little boys and girls at school often indulge, should never be encouraged nor tolerated by parents. We have known of several instances in which the minds of pure girls became contaminated through this channel. A few years ago a letter was intercepted from a little boy to a little girl and brought to our notice. Both the writer and the intended receiver of the letter were wholly unsuspected of any evil tendency, and had been on intimate terms for a long time. Notwithstanding this fact, the letter contained language in the highest degree vulgar and impure, and displayed a depth of depravity, on the part of the sender at least, which was most astounding. Mothers should scrutinize carefully the conduct of their daughters in their associations with the opposite sex, checking promptly any tendency to undue familiarity, and prohibiting utterly associations the tendency of which is manifestly bad. Eternal vigilance is the price of purity, and at no time in the development of the girl is it of more importance than between the ages of six and ten or twelve years.

A Few Sad Examples.—To illustrate the facts to which we have called attention, we will cite a few out of the hundreds of cases which have come under our care, taking pains to withhold names, and in some

cases slightly modifying some of the unimportant details so as to make impossible the identification of the individuals referred to. We do this merely for the purpose of impressing on the minds of mothers the importance of this subject and the reality of the facts to which we have called attention. Many times we have received evidence for believing that the average mother is quite too incredulous respecting the extent and enormity of this evil. It is only in the hope that we may say something to arouse such mothers to a sense of the dangers to which their little daughters may be exposed or the condition in which they may be already, that we venture to pen these chapters in the life history of a few of those who have come under our immediate care for the treatment of the terrible results of an evil which we have attempted to portray in its true colors.

A Remarkable Case.—Some years ago, a little girl came under our care for the treatment of a very curious nervous difficulty, which had baffled the skill of numerous physicians who had been invited to examine the case. The little girl was naturally bright, attractive, and intelligent, and excited the sympathy of all who witnessed the strange and inexplicable manifestations of her disease. Her doting parents had spared no means which might conduce to her recovery, and which could be secured by the employment of the best medical skill and the lavish expenditure of money, but she was no better. The painful and distressing malady which had fastened itself upon her and threatened to destroy her mentally as well as physically, held her firmly in its grasp.

At any moment of the day or night she was liable to be seized with paroxysms most distressing to behold. We at once suspected the real nature of the difficulty, but the most careful investigation failed to reveal any tangible evidence to sustain our suspicions, except what we could draw from our knowledge of the nature of the case. The mother felt almost indignant that her lovely daughter should be suspected of such a horrible vice. Every measure of treatment was wholly unsuccessful or only temporary in its effects. At last the discovery was accidentally made that the girl had for years been addicted to a curious habit which had been considered as simply a strange notion and had not aroused the least suspicion as being in any way connected with the vicious habit under consideration. Feeling thoroughly convinced now of her guilt, we did not hesitate to insist upon the child's being placed under such circumstances as to make the practice of the habit impossible. For some time this was not effected satisfactorily, but ultimately the desired end was accomplished, and a good recovery was secured.

How to Cure Vicious Habits.—The habit of self-pollution is one which when thoroughly established, is by no means easily broken. The victim of this most terrible vice is held in the most abject slavery, the iron fetters of habit daily closing the prisoner more and more tightly in their grasp. When the mother makes for the first time the discovery that her little daughter is a victim to this polluting habit, it usually seems to her that all the case will require is a careful explanation of its sinfulness and a vivid portrayal of the consequences; but in the majority of cases they

soon learn that this is not enough. The effect of this kind of transgression is to weaken the moral sense perhaps more rapidly than any other vice. The victim gradually grows weaker and weaker in will-power, and the conscience becomes less and less sensitive, until there is very little left in the character of the child to which an appeal can be made or by which an effort to reform can be supported.

Scores of times have we received from anxious mothers the inquiry, "How can I rescue my daughter from this terrible habit?" As before remarked, the task is not an easy one. Notwithstanding the fact that the effort may be wholly ineffectual, the mother should first carefully set before the child the exceeding sinfulness of the habit, its loathsomeness and vileness, and the horrible consequences which follow in its wake. As powerful an impression as possible should be made at the first interview. In some instances, this will be all that is required, but in the majority of cases the evil is not so easily mastered. After receiving the proper instruction, the child should be carefully watched. The little girl should be placed in the care of some trustworthy, judicious person whose duty it should be to keep her under constant observation every moment of her waking hours. Some simple employment or congenial amusement should be afforded by which her time may be wholly occupied, and a sufficient degree of active exercise should be secured to render the child by evening thoroughly tired muscularly and nervously, so that sleep will be natural and grateful, and the child will have no disposition to lie awake after going

to bed. Care should be taken that the child does not feign sleep for the purpose of gaining an opportunity to avoid observation. This we have known to be done very frequently by those who were determined to continue the habit in spite of the instruction and warnings given them. Immediately upon waking in the morning, the child should be taken out of bed and dressed, and should be employed from that moment until the time of retiring at night. In case there is any disease of the bladder or rectum, or of any other portion of the body immediately associated with the genital apparatus, this matter should receive attention from a competent physician, so that whatever influence it may exert as a cause of the habit may be removed.

Children suffering from incontinence of urine should be made to empty the bladder frequently, as the nervous condition which results from over-distension, or its irritable condition, often produces an uneasy condition of the genitals which may not only lead to the formation of the habit, but will present a great obstacle in the way of its cure.

Care should also be taken to see that the bowels are properly evacuated. Constipation of the bowels is often a cause of sexual excitement which cannot be easily controlled so long as the physical condition is such as to antagonize the effort of the will in the direction of reform.

Itching of the genitals is another physical condition which should receive attention, medical aid being called unless careful regard for cleanliness suffices to secure relief.

In obstinate cases, very severe means must be sometimes adopted. We were once obliged after every other measure had failed, to perform a surgical operation before we were able to break the habit in the case of a young girl of eight or ten years who had become addicted to the vice to a most extraordinary degree.

As a rule it is much more difficult to cure this soul-destroying vice in girls than in boys. They are seldom as ready to confess their guilt as are boys, and then are less easily influenced by a portrayal of its terrible consequences, so that moral means have less influence with them than with boys. The most sleepless vigilance must be coupled with the most persevering patience to rescue one of the unfortunate victims from the physical, mental, and moral ruin which is certain to result from a continuation of this terrible vice.

Reform is not impossible, however, for any one who really desires to reform; but the work of reformation must begin with the mind. The impure thoughts and images which have been harbored must be banished. The mind must be cleansed from every taint of evil. This is a task which requires no little patience, and in many cases more than human strength. In seeking to reform such an one, point her to the Source of all strength, encourage her to believe that there is One who knows the weaknesses of human nature, and while He abhors sin and villainess, loves the sinner and is ready and anxious to aid her to release herself from the toils of vice. Religion offers aid to these victims of sin for which

there is no substitute; and with the majority of those who have become fully ensnared, success cannot be attained except through earnest prayer for divine aid. By the aid of an earnest purpose to reform, and a determination to become again pure and free from the foul taint of vice, and by a humble, prayerful life of trust in divine strength, the most hapless sinner may find pardon, peace, and purity.

A Few Words to Girls.—Who does not admire the sweet purity of the lily, the delicate loveliness of the rose, the natural beauty and grandeur of a landscape, or the golden tinting of an autumn sunset? No work of art, however marvelous its ingenuity, or wonderful its symmetry, can rival for a moment the magnificence and the wonderful delicacy of the natural beauty which the Creator has spread about us. We all admire them. Even the little infant in its mother's arms, is not insensible to the charms of natural beauty.

The transparent loveliness of the dew drop or the icicle glittering in the sunshine fixes the attention of the appreciative on-looker as closely as the sheen and glitter of the costliest gem.

The love of beauty, of purity, is innate in the human mind. Who does not suffer a pang of grief at the ruthless destruction of one of nature's beauties—the crushing of a flower or a crystal, or of any lovely object?

Most beautiful and noble of all the Creator's works, is the human form. Towering in grandeur high above the most impressive of all Nature's pictures, is the human character, a miniature copy of the

divine. Even in its least attractive forms, the human face possesses a beauty unrivaled by any other natural object; and when not debased by sin and deformed by vice, the human character possesses attractions unapproachable by any other of all God's handiwork.

The Creator has given to each not only natural graces and beauties of form and character, but the power to become more beautiful and attractive through the improvement of natural good qualities, and the acquirement of others. Human life is a school, the object of which is to fit human beings for a higher and grander life. How this life is spent, determines the condition in the next. Is it not a glorious, soul-inspiring thought that this life may be made the beginning of an endless eternity of progress, a never-ending school-day, each moment adding new wisdom and knowledge and beauties and graces? The all-wise Father puts men and women, boys and girls, on trial in this life, to see whether their tendency is greatest in an upward or a downward direction. Those who love true beauty and purity, and who aspire to the highest degree of perfection attainable, will gladly seek such aids to a perfect life as are offered by genuine religion; while those who choose sin rather than holiness, vice rather than purity, ugliness rather than beauty, will despise the good counsels of their parents, the warnings of the Book of books, the admonitions of friends, and will rush headlong down the path of sin to reap at last the terrible reward of evil doers.

The love of purity, the abhorrence of sin, the de-

sire to attain to the highest degree of perfection possible to humankind, will be the actuating motives of every high-minded, unsophisticated girl. The mere thought of evil will be appalling to such an one. Self-respect and veneration for the God-implemented virtues of purity and innocence, should be encouraged and cultivated. The girl who has these qualities will turn a deaf ear to the siren voice which tempts her to sin. The allurements of vice will present no fascinations to her. She is safely entrenched behind an impregnable wall of defense.

The fact that sin may be committed without being known to parents or friends will be no inducement to a girl of pure instincts. That she will herself possess the knowledge of her guilt will be a sufficient restraint to prevent the commission of the wrong; and that God and pure beings will behold the sin and grieve over it, will be a mental monitor ever at hand to defeat the tempter.

An unvitiated mind will be ever on the alert to detect wrong and to avoid it. Its keen sensibilities will apprehend the real character of sin under whatever guise it may come. There will be no dallying with sin, no harboring of evil thoughts, no beginnings of vice. The seeds of impurity cannot take root in such a soil. How important then that from earliest infancy the mind should be prepared for the ready appreciation and eager acceptance of truth and purity and the prompt resistance of the first approach of what is false and impure.

We doubt not that we have all inherited enough of sinful tendencies and depraved propensities to lead

us in a downward direction without some powerful restraining and redeeming influence; but we do not believe in the idea that humanity is wholly depraved. There is enough of good in every human being to furnish a foundation for a pure and noble character if only the desire for such a character is present. The want of respect for the pure and good and truly beautiful is what leads so many human lives to wreck and ruin.

The only hope for the race is in the future of its girls. If there is to be any permanent, thorough-going reform, it must start with the girls and young women of the world. They are to be the mothers of the next generation. They will mold the characters of the men and women who are to rule in politics and society a score or two of years hence. They are to cradle the men who through the press and the pulpit give tone to the religious sentiments of the generation to come. Whatever they are, their children will be like them. Woman's responsibility to the race is vast and incomprehensible.

The girl who wishes to be a grand, noble, useful woman, a true mother, must be a noble-minded, truthful, honorable, pure girl. If she yields herself to vice and sin, it is not she alone that suffers; for the deformities of mind and character which she thus acquires will follow along down the ages, a legacy of woe and shame, ineffaceable to the end of time. Let every girl who has not yet been led into vice and sensuality think of this. When the tempter comes to you, count the cost to yourself and to the race before you yield yourself to sinful indulgence. Think

how your mother, your father, or an innocent brother would look upon you if your guilt were known to them, and then think how the purity of Heaven must regard such acts. Let the thought inspire in your own heart the same abhorrence and loathing, and you will be saved from the tempter's wiles.

Happy indeed is the girl who has come to womanhood with a mind untainted by sin, a character unsullied by vice! The graces of simple innocence and purity are gems above price. It is the earnest prayer of the writer that God will aid these pages to inspire in the hearts and minds of at least a few of those who may peruse them, aspirations after purity, longings for real beauty of character, such as will lead them to seek the great Source of all goodness and purity and wisdom for aid and guidance through the pitfalls and perils of girlhood, to the attainment of a noble, mature, and useful womanhood.



THE YOUNG LADY.



YOUNG girl just budding into womanhood, with a warm, loving heart, an innocent and unsophisticated mind, rosy health upon her cheeks, bounding vitality in her veins, and a gay laugh in her voice, is the most beautiful object the Creator ever made. The critical period at which the change from girlhood to womanhood occurs is known as *Puberty*.—The physiological import of this change has already been described, and need not be further dilated upon here. The time at which puberty occurs differs considerably in different individuals as well as in the two sexes and in the different races of human beings, always occurring a little earlier in females than in males. In this country, the average age at which the change occurs in girls is fourteen years. In tropical climates, the change occurs very much earlier. It is stated that one of the wives of Mahomet was a mother at ten years, and a case is on record in which puberty occurred in a little girl at the age of two years and pregnancy at eight. In cold climates, as in Denmark, Sweden, and the adjacent countries, the age of puberty is usually delayed to eighteen or nine-

teen years. In temperate climates like this it is not infrequent to observe the change as early as eleven or twelve years and as late as seventeen or eighteen.

Causes of Precocious Puberty. — Puberty is hastened by a variety of causes besides that of the influence of climate just mentioned. In the cases of early puberty which we have observed, the individuals were of feeble constitution, nervous temperament, and decidedly precocious in other particulars as well as in this. We believe this to be usually the case. Emotional influences of any sort have a direct tendency to hasten the change from girlhood to womanhood. Theaters, social gatherings, dances, etc., all have an unhappy influence in this direction.

The influence of diet in hastening puberty is such that it cannot be ignored. Stimulating foods of all kinds, by their effect on the nervous system and the circulation, stimulate the development of the sexual system and thus have a tendency to hasten the change.

It may also be remarked that temperament seems to have considerable influence in determining the period at which puberty shall occur. Medical men have observed that as a rule puberty occurs a little earlier in brunettes than in blondes, and in persons of a nervous temperament than in those who are of a phlegmatic disposition.

The national peculiarity in respect to the early or late appearance of puberty seems to be preserved to a greater or less degree even when a change of climate is made. For example, puberty occurs one or two years earlier in Jews in their native country than is

the average with girls in this country, and the same peculiarity is observed in Jewish children born in the United States.

Influences which Delay Puberty.—Aside from the influence of a cold climate, various other causes affect the system in such a manner as to delay the approach of puberty, in some persons even to a very marked degree. Some considerable delay may occur within the limits of health, but when the change does not make its appearance within a year and a half or two years of the time at which it usually occurs in other females of the same family, medical advice should be had, as there may be some fault in the constitution, the correction of which may be aided by an intelligent physician. We do not wish to intimate that drugs should be given for the purpose of bringing on the menstrual flow when it does not make its appearance at the proper time: nothing could be more unwise than this. A girl in whom puberty is unnaturally delayed is usually undeveloped in other particulars, and the proper thing to be done is to enforce such habits of life, exercise, diet, sleep, etc., as shall tend to promote growth and development. If active disease of any sort is present, such as indigestion, resulting in anæmia, nervous troubles of any sort, etc., the proper remedies or means of treatment should be employed to correct the defect.

Certain malformations of the sexual organs sometimes occur which prevent the appearance of the menstrual flow after the other changes incident to puberty, such as increased rapidity of growth, broadening of the

hips, development of the breasts, etc., have occurred. In such a case as this a skillful surgeon should be consulted. In some cases it will be found that the hymen is unnaturally developed, entirely closing the mouth of the vagina, so that the menstrual flow is left to accumulate in the vagina and uterus. Cases of this sort have occurred in which the real cause was not discovered until several years had elapsed, in which time the accumulation had become so great as to form what was supposed to be a large tumor. In a few cases the vagina has been found to be absent, while both uterus and ovaries were present. In both of these classes of cases, a surgical operation is necessary, and by the aid of it the obstruction can usually be removed. Great skill, however, and experience are required in the performance of such operations, and care should be taken to consult for the purpose a surgeon known to be wholly competent and experienced in such cases.

A peculiar case, illustrating another cause of the non-appearance of menstruation, has recently come to our attention. The case was that of a girl bereaved of her mother at an early age, and left without the care and advice of a lady friend. Being wholly ignorant of matters of the kind, she was not alarmed that the menstrual flow did not make its appearance at the usual age, and in fact did not know that she was in any way different from other girls until many years after the usual time for the appearance of the change. Becoming informed with reference to the matter, she finally consulted a sur-

geon, who, upon making an examination and consulting with other eminent physicians, arrived at the conclusion that the case was one of deformity, only the external organs being present, no trace of either ovaries, uterus, or vagina being discoverable. One very remarkable feature of this case was the fact that the hips, breast, and other portions of the form were developed in the characteristic manner, which is usually considered to be impossible without the influence of the ovaries.

Signs of the Approach of Puberty.—As the time for the establishment of a new function approaches, various changes, mental and physical, begin to make their appearance. Usually the physical development becomes more rapid. The vital forces seem to waken to new activity. The girl grows tall and slender. In the course of a year or two, the breast begins to expand, the hips to broaden, and the abdomen to enlarge. The organs of generation increase in size and become covered externally by an excessive development of the hairy growth with which the whole body is covered. In some, development takes place in the hair of the arm-pits and to some extent, in many cases, over the greater portion of the body.

Mental changes of an equally well marked character are also observed. If of a nervous temperament, the little girl, though usually kind and affable, is likely to become somewhat petulant and irritable. She is restless and uneven of disposition, apt to become easily excited, and subject to spells of depression and despondency. A strong tendency to sentimentality

is also manifest. Indeed, as one writer says, sentimentality is a malady incident to this period of girlhood as much as measles, mumps, chicken-pox, and other diseases are incident to childhood.

Hygiene of Puberty.—When the above-mentioned signs make their appearance, the mother's watchful care should be called into still more active exercise. The most strict attention should be given to every habit of life which relates to mental and physical health. The interests of the girl's moral nature should also receive attention, as the turbulent condition of both mind and nervous system which frequently occurs at this period of the girl's existence, needs the calming and soothing effects of wholesome religious influences.

Great care should be taken that a sufficient amount of wholesome and nutritious food is eaten regularly and at proper hours. At this period, the appetite is often capricious, and frequently new and strange appetites are developed which need to be restrained, while there may be suddenly manifested a strange aversion for the simple and wholesome food which has before been eaten with relish. Fruits and grains should chiefly constitute the diet. Oatmeal, cracked wheat, graham bread, milk, and fruit; with various grain preparations, furnish the very materials which are most needed for the proper development of the system at this time, and in the very best possible form. Meat should be used sparingly. The idea that girls at this time require a large amount of mutton, beef-steak, eggs, and other stimulating and exciting

food, is a very great mistake. It is much better that the system should be undisturbed by stimulating influences of any sort.

Too early indications of the occurrence of puberty are just cause for solicitude on the part of the mother, and call for the employment of all such measures as will tend to prevent premature development. It should be recollected that early decay is very certain to be the result of precocious development.

The changes which occur at puberty require but a very short time for their completion. In fact the rapidity with which such extraordinary changes may occur is very remarkable. Such extraordinary demands on the vital forces of the individual make this the most critical of all periods in a woman's life. At this time is often laid the foundation for a whole lifetime of suffering. A large share of the peculiar troubles with which women are afflicted originate in indiscretions occurring at this time. The ignorance of mothers and their failure to instruct their daughters when they themselves are informed respecting the dangers incident to this period of life, undoubtedly result in a vastly greater amount of disease and premature death than the "ills of maternity" which are often charged with being the bane of a woman's life and the cause of the greater portion of her sufferings.

We cannot emphasize too emphatically the importance of giving proper instruction at the right time. Mothers should first inform themselves thoroughly respecting the physiological changes which puberty in-

volves, and the possible dangers which may arise, and should then give their daughters explicit and careful instruction respecting the care of their health during this critical period.

We have met hundreds of cases in which women have suffered all through life in consequence of the want of instruction at the proper time. Within a few hours of the time of this writing, we have been consulted by a lady of unusual intelligence and most brilliant talents, whose whole life has been made miserable with pain and suffering in consequence of inadvertent imprudence during this period. A little instruction at this time would have saved all these years of suffering and added greatly to the usefulness of one whose rare gifts qualified her for wide usefulness. Notwithstanding her disabilities and the great obstacles thrown in her way by feeble and uncertain health, she had accomplished a great amount of good and won an enviable position in society; but, just when she was by experience and influence prepared to accomplish the greatest good, her nervous system gave way under the double strain of physical suffering and mental labor. Though fond of children and devoting her whole life to efforts in behalf of poor little waifs, she had herself to remain childless in consequence of disability suffered from ignorant violation of nature's laws at the establishment of the menstrual function.

Some time ago a young lady was brought to us for treatment who had suffered for years from a similar cause. The menstrual function made its appear-

ance, she was alarmed and distressed, and having never been taught to make a confidant of her mother, especially on subjects of this kind, she said nothing about the matter, but brooded over it and mourned about it until reason was nearly dethroned. In this condition she roamed about through snow and rain, exposing herself to the searching cold of an early winter day, at one time remaining out during the whole night, her clothing becoming saturated to the skin and her whole body thoroughly chilled. This was repeated at nearly every menstrual period. It resulted, of course, in the production of serious local disease, in a very short time giving rise to severe pain in connection with menstruation, which increased her mental disturbance. This led to the discovery of her real condition by her friends, but they too were ignorant of what should be done under the circumstances; instead of placing the girl under the care of a skillful physician, she was sent to school. Close confinement to her studies and the constant recurrence of a period of suffering, led to the appearance of nervous symptoms, which finally terminated in what her physician pronounced to be a serious attack of inflammation of the brain. For weeks she was very near death's door. She finally rallied, however, but was left in a helpless condition from complete paralysis of the lower extremities.

The above was the condition in which we found her. The history of the case led us to make a careful local examination, the result of which was simply astounding. It scarcely seemed possible that disease

could have obtained so firm a hold upon one so young and in so short a space of time. The uterus and ovaries were both involved in most serious disease, the womb being enormously enlarged from repeated inflammation, and prolapsed to such a degree as to be almost ready to make its exit into the external world, and exquisitely sensitive, as were all the surrounding tissues. After many months of treatment the patient was restored to a fair degree of health, regaining the use of her limbs and being almost wholly relieved of the severe menstrual pain which she had suffered from almost the beginning of the function. In this case an unusually intelligent, amiable girl was well-nigh ruined for life by the injuries resulting from want of knowledge.

As before remarked, we believe it to be the solemn duty of mothers to thoroughly inform themselves on this subject, and then impart to their daughters the needed information. Indeed, one of the strongest motives which has actuated us in the preparation of this volume has been the hope that we might, by calling attention to these facts, induce at least a few mothers to give their daughters timely warning of the necessity of special care and watchfulness at the time the menstrual function is being established and at the monthly recurrence of each subsequent period. Young girls, especially at this period, are often quite reckless respecting the care of their health. This is particularly the case if they have never been previously taught to regard the preservation of their health as a sacred duty and a moral obligation as

binding upon them as any other. No pains should be spared to impress upon them the fact that the first two or three years after puberty are pretty certain to exert an influence of no trifling character upon their whole subsequent life. After the menstrual function becomes thoroughly established, it is not so easily disturbed, but at this time, when nature is just establishing the changes incident to the performance of this function, very slight causes may produce serious disturbance.

One who is acquainted with these facts is often appalled at the recklessness which young women sometimes exhibit. An invitation to a party or concert or even a fashionable ball is not refused even if the weather may be such as to make it highly imprudent for a young lady passing through a catamenial period, to venture out of doors, to say nothing of the disturbing influences to which she will be likely to be subjected, such as the violent and prolonged exercise of dancing, confinement in a close and overheated lecture-room, occasioning profuse perspiration to be followed by a chill on coming out in the cold, damp air, etc. The necessity for rest and especial care at this period has long been recognized among uncivilized nations. We find evidence also, that this fact was duly appreciated among the ancient Jews. Their wise law-giver, Moses, considered the matter of sufficient importance to place in his code of regulations known as the "ceremonial law," certain rules to govern the conduct of women during this period. The Jewish women were required to leave the camp

with all its burdens, excitements, and anxieties, and withdraw to a quiet and secluded place, where they might enjoy quiet and rest during the performance of the menstrual function. A similar custom still prevails among Indian women, who, as is well known, suffer very little at childbirth, a fact which we believe is very closely related to the care which they exercise when "unwell."

In conclusion, we would summarize the precautions to be observed at the approach of puberty and at the menstrual period as follows:—

1. Maintain the general health in every way possible. This can best be done by proper food, which means a simple and unstimulating dietary; abundant exercise in the fresh air with exposure to the sun; proper clothing, which means warmly clothing the limbs as well as the trunk of the body and avoiding stays, corsets, belts, and tightness of the dress about the waist as well as suspension of the skirts from the hips; and proper rest at proper times with perfect regularity of all the habits of life.

2. While the young girl should not be allowed to engage in any kind of hard or taxing labor, it is much better that both mind and body should be occupied by light and, if possible, congenial employment. Even too much labor is less injurious than idleness, but it should be recollected that while the body is forming and new functions are being developed, neither muscles nor nerves will bear the amount of taxation which maturely developed tissues are able to endure.

3. When the menstrual period makes its appear-

ance or a day or two before, if the symptoms are such as to make its approach apparent, the girl should be relieved of taxing duties of every description, and should be allowed to yield herself to the feeling of *malaise*, which usually comes over her at this period, lounging on the sofa or using her time as she pleases, provided it is not in the perusal of sensational stories or in too great devotion to fancy-work, or any other occupation in which an unhealthful or strained position has to be assumed.

4. The greatest care should be taken to avoid taking cold, as the most serious maladies are often brought upon women by exposure at this time. To accomplish this, it is not necessary that the person should be confined constantly in a heated room. The overheating of rooms is the most common cause of susceptibility to colds, hence it is much better that the body should be inured to a certain degree of cold so that very slight exposures cannot affect the system injuriously. The susceptibility to colds may also be to a very great extent overcome by the habit of taking daily or tri-weekly baths. The bath should not be a hot one, but its temperature should not be so low as to be uncomfortable. Water at eighty degrees is twenty degrees below the temperature of the body, and cool enough to produce tonic effects on the skin without chilling the person uncomfortably. The clothing of the feet is a matter of very great importance, as getting the feet wet is the most common of all means by which women contract colds at this period. It is not necessary that the shoes should be

saturated in order to produce a cold : when thin shoes are worn, the wetting of the soles, by which the bottoms of the feet become chilled by evaporation of moisture from the soles of the shoes, is sufficient to induce a severe cold in a sensitive person.

5. During the catamenial period, the mind should be kept in a calm and undisturbed condition. Intense grief, sudden anger, or even exuberant joy have been known to suddenly check the menstrual function in the midst of the period. Severe mental application sometimes produces the same result. These effects are produced through the connection of the nerve centers of the brain and spinal cord with the uterus. Numerous experiments have shown that the circulation through the uterus is greatly affected by mental states.

6. Notwithstanding all the preceding precautions which we have given, we think it important to add that constant watching of symptoms or apprehension of possible or impossible dangers is quite as injurious as inattention to the points we have mentioned. While mothers should be watchful and solicitous for the welfare of their daughters at the ushering in of the menstrual function and for a few years following, they should by no means consider it their duty to yield to every caprice or to gratify every fancy which may be manifested by their daughters at this period. This sort of care is an injury rather than a benefit. Intelligent supervision and watchcare guided by reason is what girls require to enable them to pass through the critical period of puberty and early womanhood with safety.

Education of Young Ladies. — The education of young ladies is a question which has been widely discussed during the last few years. A variety of positions have been taken by prominent educators with respect to this question, and the discussion has not as yet resulted in a complete and thorough settlement of all the problems involved. We have not space in this little work to consider the subject in all its phases, but we cannot avoid at least a brief consideration of the subject from the stand-point of its relation to health.

Home Training. — Of first importance in the education of a young lady is proper home training and education. The young lady who has acquired all the culture and accomplishments which can be secured in the schools, but has no knowledge of the simple arts so necessary to the making of a home, and the proper training of a family, has neglected the most important part of her education. The general prevalence of this defect is becoming alarming. The girls of the present generation are as a rule far less skillful in bread-making, house-cleaning, and the other household arts, than in piano-playing, elocution, and similar accomplishments. This condition of affairs is becoming more and more common in this country. The poor mother, who has become worn out with arduous toil in the rearing of her family and in providing them with comforts and luxuries, seldom has a daughter who is able to take her place in the kitchen, at the wash-tub, or at the ironing-table. Unfortunate as is this state of things for the broken-down mother, as

for her imperfectly educated daughter, mothers are themselves generally responsible for it. Mothers who have been brought up to a life of usefulness and labor, often become infected with the popular notion that physical labor is ungentle and unladylike, and determine that their daughters shall be "brought up differently from what they were." Imagining that they are going to make their daughters something more than women, and prepare them for a sphere something above that of true womanhood, these silly mothers toil and slave in the kitchen while their daughters sing and thrum the piano in the parlor, or simper and drawl nonsense in the drawing-room with some shallow-pated fop. The mother rises at early dawn to prepare the breakfast while her useless daughters are sleeping off the effects of their midnight dissipation in the ball-room. Reared in idleness to habits of uselessness, the hard earnings of father and mother are spent in lavishing upon them accomplishments which can be of no service to them in after life. Such daughters are unfit to meet the realities of life, and are utterly devoid of the real accomplishments which go to make up womanly character and which would fit them for the performance of the duties of wife and mother in their mature years.

The fact is that the average modern young woman is accomplished to the point of actual uselessness. What women as a rule need is a more solid education. We do not object to accomplishments if they are not acquired at the expense of that thorough training which lies at the very foundation of real refinement

and usefulness. How many young women fritter away their time and waste their lives in devotion to nothings. A young woman who is able to sing and play the piano skillfully, to dance gracefully, to talk "small talk" fluently, to dress "to kill," to sketch a landscape passably, to embroider, to knit lace collars, to jabber a little French and German, may be able to satisfy the demands of society, but may be utterly wanting in that kind of culture which contributes to the real happiness of life. Such a person, as a quaint writer once said, is "all ruffle and no garment."

Nothing contributes more to the formation of a sound character than a knowledge of the humble industries which contribute to the making of a happy home. A long stride will be made toward the millennium for which so many long and which some fondly believe to be approaching, when a training in useful labor shall be considered as the first and most important part of a young lady's education; when girls are taught to do their part in the world's work, and that to be able to do it well is the highest position and the greatest happiness to which they may hope to attain.

A mother cannot do her daughter greater injury than to allow her to grow up ignorant of household duties and unaccustomed to useful labor, yet mothers are so utterly blind to their duties in this respect that it is not to be wondered at that the rising generation of girls is vastly inferior to their predecessors. An omen for good is the establishment in many large

cities of cooking-schools and schools for training nurses; and there is some prospect that this country will soon possess institutions similar to those already established in England in which girls can learn a variety of useful employments, and also receive training in domestic duties.

Popular sentiment needs to be educated in the right direction, and we believe that in the better classes of society at least some little advancement is being made, thanks to the labors of such noble and talented women as Mrs. Livermore and Mrs. Jane Swisshelm, whose eloquent words in popular lectures and magazine articles have so graphically portrayed the follies of fashionable education, and the advantages of practical training as to convict thousands of mothers of the wickedness and folly of the popular methods of educating daughters, and have thus given an impulse to a reform the influence of which we trust may widen and deepen until the tide of fashionable folly is checked. The National Woman's Christian Temperance Union under the masterly leadership of Miss Frances E. Willard has recently organized in America a work the influence of which eternity alone can tell. The introduction of the "health plank" into the platform of this organization, which we regard as the very backbone of the present wonderful temperance movement in the United States, was an important advance. Women are of all others the very ones to institute and carry forward this great reform, and the same indomitable energy, unflagging perseverance, and irresistible determination

which has marked the work of the leaders of this organization will secure the same happy results which have followed their efforts in behalf of temperance reform.

School Education. — There is no doubt but that school-life has an important influence on the health of young ladies, particularly those just entering womanhood. School-girls between the ages of twelve and twenty often suffer life-long injury as the result of too close application to their studies. They are stimulated by the spirit of competition which is fostered in most schools, or compelled by the rigorous discipline to which they are subjected in some schools, particularly young ladies' seminaries, and the ambition of teachers and parents to prepare them for graduation in the shortest possible space of time. The appearance on the stage, at the commencement exercises of some of our schools, of "young girl graduates" with frail forms and a hectic flush on their cheeks and a weak and overstimulated nervous system, is an exceedingly common spectacle. Soon after graduation, if not before, these overworked girls, having escaped from the cramming process to which they have been subjected for years, are turned over to the physician to be put in repair physically. Not infrequently the physician finds this by no means an easy task. The physical education has been so utterly neglected, while the nervous system has been overstimulated and overworked with the artificial educational process to which the patient has been subjected almost from early girlhood, that there is no foundation upon which to build the superstructure of

health. Such girls go through life weakly from suffering, and unable to make any use of the knowledge which they have obtained, even if some portion of it may have been of a character likely to be of use, and too often the prospects for health and usefulness have been blighted by devotion to accomplishments of little or no practical value in life.

Girls have been charged with being unequal to boys in mental calibre, and their breakdowns in the midst of a course of study or just after its completion have been attributed to a natural mental inferiority. We believe, however, that the female brain is equally as capable of mastering the studies usually pursued in our schools and colleges when the education of the boy and girl have been the same from early childhood. Unless the young lady's early training has been such as to dwarf her intellect and check the development of her mental faculties, she ought to be in every way the intellectual peer of her brother.

An argument for the mental inferiority of women has been based on the fact that the brain of man is larger than that of woman. A comparison of a large number of brains of both sexes has shown that in males the average weight is $49\frac{1}{2}$ ounces, and in females 44 ounces, a difference of $5\frac{1}{2}$ ounces, or about ten per cent in favor of the male brain. This fact has been used until it has become threadbare by those who oppose the coeducation of the sexes and the granting to woman of an equal share with man in the various walks of life. There is a certain class of men, and now and then a woman also, who delight to descant on the inferiority of woman, and dilate upon

the asserted fact that she is a "weaker vessel" and hence unqualified to fill most of the positions of trust, responsibility, and honor after which men aspire. Some little time ago, a specious article upon this subject appeared in one of the popular monthlies under the heading "Science and the Woman Question," in which the author—a woman—took strong ground in favor of the position that woman is decidedly inferior to man in mental capacity. The general interest taken in this subject by both sides warrants us in devoting to its consideration a larger amount of space than would be otherwise justifiable. Let us consider some of the arguments advanced in favor of the position named. It is undoubtedly true that the average female brain is some $5\frac{1}{2}$ ounces less in weight than the male brain; but those who use this argument with so much force, carefully conceal the fact that the proper measure of brain capacity is not its absolute size, but rather its proportionate size, or the size or weight of the brain compared with the bulk or weight of the individual. The element of quality must also be taken into consideration, as we shall show presently.

Now while it is true that the female brain is five ounces lighter than the male brain, it is also true that the average woman is something like twenty-five pounds lighter in weight than the average man, the average man weighing 145 pounds, and the average woman 120 pounds. Dividing the weight of the average man by the average weight of his brain, we very readily ascertain the weight of the male brain to be 1-47th that of the body. By a similar

process we find that the average female brain is a little less than 1-45 of the weight of the average female. It thus appears at once, that if the argument respecting the size of the brain amounts to anything, it proves that the female brain is superior to that of the male. The above conclusion would not be a just one, however, for, as all close students of psychology are well aware, the element of quality, as before remarked, must be considered as well as that of quantity in making a comparison between the brains of persons of different race or of different sex. The great naturalist Cuvier carried a brain weighing $64\frac{1}{2}$ ounces—15 ounces more than that of the average male brain. Some years ago, a brick-layer died in London whose brain was found to weigh 67 ounces. Notwithstanding the enormous size of his brain, this individual never manifested during his life any unusual degree of intelligence or mental capacity. Dr. Morris, who made the autopsy at University College Hospital in 1849, states that the man's height was five feet and nine inches, his frame robust, that he had a good memory, and was fond of politics, but could neither read nor write. Dr. Büchner records the brain weight of a man who was an epileptic and whose brain weighed $64\frac{1}{2}$ ounces—exactly the same as that of Cuvier. The largest female brain of which we have any record weighed $61\frac{1}{2}$ ounces. It was possessed by a woman who was a monomaniac.

Some recent studies in the subject of brain weight in the Chinese race show very interesting results which have a direct bearing on this subject. The ob-

servations were made by Dr. Clapham, and reported by him in the *Journal of the Anthropological Institute*. Dr. Clapham found the average weight of the brains which he examined to be: in males, 50½ ounces; in females, 45 ounces. The possessors of these brains were not in the higher classes of Chinese, but were Coolies, who are the lowest class of Chinese society. Notwithstanding this fact, the average weight of the brain in the males was one ounce greater than that of the average European man, and in the females one and one half ounces greater than that of the average European woman. Now if the premises upon which the arguments for the supposed mental inferiority of women are based, are good for anything, they will prove beyond a possibility of doubt that the average Chinaman is greatly superior, intellectually, to the average European male, and the same for Chinese women.

The investigations of physiologists have shown that the brain weight of the average negro is precisely the same as that of the brain of the average European woman. As the intellectual inferiority of the negro male to the European male is universally acknowledged, it would follow, allowing the premises to be correct, that the average European woman must be intellectually inferior to the average European man; but the facts stated in the preceding paragraph conclusively prove that this method of reasoning is an incorrect one. As stated before, the element of quality must be taken into consideration, in investigations of this subject. The relation of brain quality to the brain function is well recognized by biolo-

gists in the study of the mental functions in lower animals, and why should not the same principle be applied to the study of mind in human beings? Dr. W. Lauder Lindsay, in his admirable and exhaustive work on "Mind in the Lower Animals," calls attention to this fact by numerous examples, one of the most striking of which we present in his own language:—

"The Nuehr and other savages depend for subsistence solely on what nature produces, therefore neither sow nor plant, and consequently are frequently on the verge of starvation. The Veddas of Ceylon live without any system of cultivation, and the Bushmen of Southern Africa have neither flocks nor cultivated grounds. On the other hand, according to the observations of Dr. Lincecum, who has carefully studied its habits since 1848, there is in Mexico, Texas, and other parts of North America, an ant which has been distinctively called the 'agricultural' or 'harvesting' ant. It not only stores up seed, but cultivates the plants which are to provide it, and carefully gathers in its crop at the right season. . . . In the wet season the seeds in the ant granaries are apt to get wet and sprout; and, accordingly, on the first fine day the ants bring out all the damaged grain and set it in the sun to dry, returning to the store only such as is uninjured. These ants may truly be said to cultivate their estates. They have grass paddocks around their estate nests, and they weed these paddocks. From their fields they bear off all herbage save *Aristida Strigta*, a grain-bearing grass, called by Dr. Lincecum 'ant rice,' and they sow the seeds of

the same grass. When ripe, the grain is harvested and the chaff removed. Several other grains or seeds of grasses and other plants are gathered and garnered in a similar way. These ants, therefore, sow, reap, and store grain for winter use. If the grain is set sprouting by damp from inundations, it is dried in the sun on fine days—it is exposed, that is, only during the day and during sunshine, being taken in-doors at night. According to Belt, certain leaf-cutting ants of Nicaragua cultivate fungi on decomposing leaves in their subterranean nests, ‘the ants cutting and storing the leaves for the sake of the fungi which are subsequently developed in the debris.’”

It will not be disputed that the ants above described are in some respects superior to the tribes of savages with whom they are compared, notwithstanding that the brain of the ant, such as it possesses, is a mere atom compared with that of a Bushman.

Bastian, in the exhaustive work to which we have previously referred, gives the weight of the brain in a large number of distinguished men, among others those of Tiedmann, the celebrated anatomist, and Hansemann, the eminent mineralogist; the brain of the former weighing 44.2 ounces, barely above that of the average woman, and that of the latter 43.2 ounces, considerably below the weight of the average female brain. Speaking of the relation of brain weight to intelligence, Bastian says, “It seems perfectly plain from the facts recorded that there is no necessary or invariable relation between the degree of intelligence of human beings and the mere size and weight of a brain. Looking in fact to the mere size and

weight of a brain, it must never be forgotten . . . that an organ of a large size or weight may yet be a more or less inferior perceptive or thinking instrument by reason of its inner and finer developments being defective and badly attuned for harmonious action. Or again, it may be a defective instrument by reason of some still more subtle and mere molecular peculiarities of the nerve elements of which it is composed; whereby these are perhaps both less receptive and less 'retentive' of those sensorial impressions which constitute the raw material of intelligence, and also less capable than they might be of taking part in higher mental operations. There is, therefore, no invariable or necessary relation between the mere brain-weights of individuals and their degrees of intelligence."

Bastian also mentions the fact that "the male brain actually attains 5-6ths, and the female brain 10-11ths of its total ultimate weight by the end of the seventh year, although at this time the inner and finer structural development of the organ is, in all its higher tracts, still in a comparatively embryonic condition." This eminent author draws from this fact the following conclusion:—

"Even such data might, therefore, be considered to show, in the strongest manner, how comparatively unimportant is mere bulk or weight of brain in reference to the degree of intelligence of its owner, when considered, as it often is, apart from the much more important question of the relative amount of its gray matter, as well as of the amount and perfection of the

minute internal development of the organ either actual or possible."

It thus appears that no less eminent authority than Dr. Bastian recognizes the fact that the quality of brain structure is of far greater importance than quantity, while he, as well as all other investigators in this line, hold to the position that average brain size is, all other things being taken into consideration, a fair measure of the average intelligence of a race or class of people. It is reasonable to suppose that more extended investigations and deeper research into the finer elements of brain structure may only establish the fact that differences in mental capacity observed in different races and classes result as much from differences in the quality of the structure as in the quantity of the brain matter.

Use has also been made of the fact that the lower limit of brain power in women, that is, the point at which human intelligence vanishes, is below that of males. Broca, as quoted by Bastian, places the lowest limit at which ordinary intelligence may be manifested in females at 32 ounces, and in males at 37 ounces. A recent writer* in a popular magazine concludes from this fact that the male brain is superior to that of the female, although to persons of "ordinary intelligence" it would seem to be apparent that the female brain-matter must be superior to the cerebral tissue of males since a smaller amount of it is capable of manifesting intelligence. But we consider

* Miss Emma Hardaker, *Popular Science Monthly*, March, 1882.

it doubtful whether any correct conclusion can be drawn from such data as this, owing to the fact to which we previously called attention, that in these investigations no account was taken of the proportionate weight of the brain as compared with the rest of the body, which seems to us too important a matter to be ignored. We are by no means prepared to accept the arguments offered by the writer above mentioned, who says, "It is most probable that we may at some time establish an exact correspondence between brain substance and intelligence, as the size and condition of the lungs yield an exact measure of the breathing power and as the contractile muscle of the heart measures the amount of blood ejected at each pulsation."

This is but a partial view of the case. Breathing power, as we have often demonstrated, depends as much upon the quality of the respiratory apparatus as upon its size. We have frequently met cases of very great lung capacity in persons much below the average stature. The same is true of the working power of the heart. The amount of blood which the heart can eject depends as much upon the quality of the muscle and its nervous connections as upon the size of the heart. The same is true of the stomach and other organs. The amount of food which the individual can digest depends not alone upon the size of the stomach, but upon the quality of the stomach and the digestive juices secreted by it.

While it may be true, as the writer referred to states, that the average man eats and assimilates one-fifth more food than the average woman, there is no

good ground for the conclusion that because a man eats more he thinks more. Again, it is undoubtedly true that a larger amount of muscle enables him to make a greater expenditure of force, but this can readily be accounted for by the greater amount of muscular activity in man as compared with woman. The author reasons on the supposition that "the brain of man has the same proportion to the weight of his body that the brain of woman has to the weight of her body," which we have previously shown to be incorrect, the average female brain being greater in proportion to the weight of the body than the average male brain. It thus appears that while the brain of woman might not be equal in absolute size, it might still receive as large an amount of blood and utilize as great an amount of force on account of its greater proportionate size.

The same writer also bases an argument on the fact that woman expends a large amount of force in the functions of motherhood, which he assumes as about one-twentieth part of the total amount of vital force during the child-bearing period. In this argument an important fact is overlooked; namely, that during the period of pregnancy, when the mother's vital powers are taxed in an extraordinary degree, a more than commensurate increase occurs in the force-producing capacities of the mother. This fact is well recognized by physiologists, and ought not to be ignored in this discussion. It is well known that a woman usually gains in flesh during the period of pregnancy, and women often enjoy a higher degree of health at this period than when in their usual

conditions. In view of this fact, it appears to be fair to draw the conclusion that motherhood is really a gain to an individual in the ability to manifest force rather than a loss, at any rate, during the period in which the functions of maternity may be exercised.

Another fact is worthy of attention in this connection; namely, that the transmission of characteristics from the mother to the daughter by heredity is scarcely if any greater than from the father to the daughter. If woman's training and education through generations has been such as to develop her mental faculties less than those of man, the deteriorating influences of these circumstances must be neutralized by heredity, since mothers are as likely to transmit their enfeebled mental qualities to their sons as to their daughters, and fathers as likely to transmit their superior mental development to their daughters as to their sons. The seeming contradictions to this statement may be readily accounted for by the fact that girls have not, at least until recently, enjoyed the same opportunities for developing the mental powers which they might possess as have boys, so that superior inherited mental qualifications have undoubtedly in thousands of instances lain dormant in women because their circumstances were not such as to expand and develop them.

But suppose that those who so arduously seek to demonstrate the mental inferiority of woman were able to establish their point, what conclusion has been reached? Simply the fact that through a long course of injudicious training, woman has become mentally as

well as physically inferior to man. That such a difference, if it exists, is simply the result of education, cannot be doubted. All the evidence necessary for the demonstration of this fact is afforded by an observation made by Voigt, as quoted by Bastian in his recent admirable work entitled "The Brain as an Organ of Mind," that the difference between the size of the brain in males and females is much less in uncivilized than in civilized nations. This is undoubtedly due to the fact that in races which are in a low state of culture the occupations for physical and mental labor are more nearly alike. As Voigt remarks, "Among the Australians, the Bushmen, and other low races possessing no fixed habitations, the wife partakes of all her husband's toils, and has, in addition, the care of the progeny. The sphere of occupation is the same for both sexes; whilst among civilized nations there is a division both in physical and mental labor. If it be true that every organ is strengthened by exercise, increasing in size and weight, it must equally apply to the brain, which must become more developed by proper mental exercise."

The observations made by Le Bon, also quoted by Bastian, show that the difference between the capacity of the skulls of males and females among modern Parisians is about double that of the ancient Egyptians. From these facts we may legitimately draw the conclusion that the difference in the mental development of men and women is wholly the result of differences in training and education which have been operating through many generations. If this is the case, certainly it is about time that woman had a chance to

regain her lost capacity, and instead of being an argument against the demands made for woman for wider opportunities for culture, it is the best possible argument which could be urged in favor of affording her such opportunities. Indeed, it is evident that she ought to be provided with better opportunities for culture and development than man, who has so long enjoyed a monopoly of these advantages.

Coeducation of the Sexes.—The question of the coeducation of young men and young women has been much discussed during recent years. The question is important, but we have not here space to give it more than a very brief consideration. Under proper restrictions as to intercourse with each other, we regard the coeducation of boys and girls as beneficial to both, in accustoming each to the society of the other, and conducive to the development of desirable traits and the repression of undesirable ones in both sexes. The difficulties in preventing too intimate associations of the sexes during school-life are sometimes so great, or the necessary restrictions so imperfectly maintained, that whatever advantages might be derived from proper associations are much more than neutralized by the evil results of too great intimacy between the sexes. A school at which boys and girls or young men and young women are allowed to associate without the restraint of rigorous discipline and the enforcement of wholesome regulations, is a dangerous place for either sex; and schools in which the sexes are strictly isolated are decidedly preferable to such schools as these, which are, unfortunately, far too common. It may, in fact, be regarded as abso-

lutely impossible for a faculty or board of trustees, in a school for both sexes, to prevent serious evils from growing out of the close associations of school-life and the opportunities for improper and injurious alliances, without the thorough coöperation of the parents of the students and of the community in which the school is located. This fact is well evidenced by the frequent occurrence of scandals in connection with colleges and seminaries and the numerous elopements and premature marriages which originate in the too intimate association of the sexes during school-life.

The great objection which is urged against the coeducation of the sexes is that women have no practical use for the scientific and classical studies to the acquirement of which a great portion of the period of study in our colleges is devoted. It should be borne in mind, however, that the discipline derived from a thorough course of training in the classics and sciences is really of far greater value than the mere knowledge obtained. The *Iliad* and the *Odyssey* may be forgotten; the abstractions of mental philosophy may sink into oblivion; time may efface almost the last trace of the knowledge of facts so laboriously acquired; but the acumen of thought, the power of critical analysis, the strength and independence of character gained by the labor put forth in the acquisition of knowledge, can never be lost while reason remains enthroned. The majority of men who graduate from colleges do not spend their lives in translating Greek poems nor in solving the problems of Euclid. Probably two-thirds or three-fourths never look into their Greek or Latin text-books six months after they re-

ceive their diplomas. Their school studies are forsaken and soon forgotten; but the mental discipline which they received in their pursuit remains with them as valuable capital to be invested in any enterprise in which they may embark.

A sensible woman who has been thoroughly educated in the classics, mathematics, chemistry, and geology, need not necessarily make herself ridiculous by quoting Latin or Greek passages to her visitors, or spend her whole time in the collection of specimens of rocks and minerals, or in chemical investigations for the detection of some new metal, or in midnight observations for the discovery of a comet or a new planet. The mental training, the habits of close thought, the power of independent reasoning and investigation which the woman of sound mind acquires in a thorough college course are of as great benefit to her in the performance of household duties as to her equally well educated brother engaged in the various departments of business life.

Overstudy at Critical Periods.—The only real evil result to woman which can be made to appear as growing out of the coeducation of the sexes is the possibility of overstudy when the system requires tranquillity of mind and rest of body. As previously remarked, the girl who is approaching puberty should be relieved of severe burdens of any kind. She is not prepared to sustain any severe tax of either mind or body, and if at this time she is compelled to keep pace with others whose conditions are not such as to demand shorter lessons and less severe mental taxation, the exhaustion of the nervous system which

may result may interfere seriously with the proper completion of the approaching changes in her physical system intended to result in the establishment of an important function. There is no doubt that girls have sometimes been injured by overstudy at this critical period.

What is true of the few months preceding the establishment of the menstrual function is also true of the few days attending each subsequent occurrence of the flow during the first years after the establishment of this function, especially the first two or three. Girls require rest of both body and mind at the menstrual period. This should not be absolute, but nothing taxing should be imposed upon them. They are not able to do their best physically or mentally at this period, as the forces of the system are in part occupied in the performance of vital functions not under the control of the will.

From these facts it appears that girls between the ages of twelve and eighteen should not be expected to do so large an amount of work as boys of equal mental capacity, and hence it appears that certain dangers may arise from the competition of the sexes in a school in which they are educated together. This danger is by no means so great, however, as has been claimed, since, as is well known to physiologists and to all acute observers, girls develop mentally more rapidly than boys. The mental capacity of a girl at sixteen is usually equal to that of a boy at eighteen, so that as a rule girls are able to accomplish their school tasks much more rapidly than boys of the same ages and with a less expenditure of vital

force. This being the case, the teacher who understands the matter will readily obviate the liability to injury which the young lady members of his classes might otherwise suffer by showing them greater leniency during the week of the menstrual period, knowing that they will, if properly encouraged, readily make up during the three following weeks the little they may have dropped behind.

Those who use this argument against the coeducation of the sexes seem to have lost sight of the fact that it tells fully as much against the education of girls together as against the coeducation of girls and boys. If a girl cannot be educated in connection with a boy on account of her diminished ability to study during the menstrual week, it is evident that she cannot be educated with other girls, except those whose menstrual week may happen to occur at the same time as her own. The carrying out of this principle would require that girls should be classified according to the time of the occurrence of the menstrual function as well as according to their mental acquirements or ability. But we hope no one will attempt to carry out this suggestion, as such a project would certainly prove a failure on account of the great variation of the time of the occurrence of the menstrual function during the first few years after it is established, the only time when it interferes to any great extent with the other functions of the body, mentally or physically.

From some considerable observation with reference to this subject we are convinced that the injury which girls suffer from the system of coeducation is

not so much due to their sexual peculiarities as to the improper methods to which they are subjected. The process of cramming, so common in nearly all of our popular schools, and particularly in young ladies' seminaries, is really the cause of the greatest injury to young girls. They suffer more than boys from this "stuffing" process because of the diminished ability to endure it to which they are subject at certain periods. We firmly believe that girls are fully able to compete with boys of the same age in the study of any of the subjects pursued in our schools and colleges, provided natural and proper methods of instruction are employed.

We ought not to leave this part of the subject without calling attention to the fact that much of the weakness and failure of girls during school-life is due to improper habits of dress, improper food, want of regular habits of rest, attendance at theaters, evening parties, dances, etc., too little physical exercise, confinement in close and unventilated schoolrooms, sitting upon hard and improperly made seats, bending over desks which are equally improper and unsuitable in construction, — all of these causes and many more among which may be included the vicious habit to which we have called attention in a previous section, are really the chief causes of the numerous breakdowns which are so common among school girls.

Novel-Reading. — The reading of works of fiction is one of the most pernicious habits to which a young lady can become devoted. When the habit is once thoroughly fixed, it becomes as inveterate as the use of liquor or opium. The novel-devotee is as much a

slave as the opium-eater or the inebriate. The reading of fictitious literature destroys the taste for sober, wholesome reading and imparts an unhealthy stimulus to the mind, the effect of which is in the highest degree damaging.

When we add to this the fact that a large share of the popular novels of the day contain more or less matter of a directly depraving character, presented in such gilded form and specious guise that the work of contamination may be completed before suspicion is aroused, it should become apparent to every careful mother that her daughters should be vigilantly guarded against this dangerous source of injury and possible ruin. We have dilated quite fully upon this subject in a preceding section, and will not enlarge upon it here. Yet we particularly desire to go on record as believing firmly that the practice of novel reading is one of the greatest causes of uterine disease in young women. There is no doubt that the influence of the mind upon the sexual organs and functions is such that disease may be produced in this way. As remarked in the consideration of the physiology of the reproductive organs, it is a common observation that the menstrual function may be suspended suddenly as the result of grief or some other strong emotion experienced by the individual. Hemorrhage or profuse menstruation may result from a similar cause. These facts demonstrate beyond the possibility of question that the circulation in the uterus and its appendages is greatly subject to changes through the influence of the mind. Reading of a character to stimulate the emotions and rouse

the passions may produce or increase a tendency to uterine congestion, which may in turn give rise to a great variety of maladies, including all the different forms of displacement, the presence of which is indicated by weak backs, painful menstruation, leucorrhœa, etc.

We do not insist that nothing should ever be read but history, biography, or perfectly authentic accounts of experiences in real life. There are undoubtedly novels, such as *Uncle Tom's Cabin*, and one or two others which we might mention, which have been active agents in the accomplishment of great and good results. Such novels are not likely to do anybody any harm; but the number of harmless works of fiction is very limited indeed. Many works which are considered among the standards of literature are wholly unfit for the perusal of young ladies who wish to retain their simplicity of mind and purity of thought. We have felt our cheeks burn more than once when we have seen young school-girls intently poring over the vulgar poems of Chaucer or the amorous ditties of Burns or Byron. Still worse than any of these are the low witticisms of Rabelais and Boccaccio; and yet we have not infrequently seen these volumes in the book-cases of family libraries readily accessible to the young daughters or growing sons of the family. The growing influence of this kind of literature is far more extensive than can be readily demonstrated. Thousands of women whose natural love for purity leads them to shun and abhor everything of an immoral tendency, yet find themselves obliged to wage a painful warfare for years to banish

from their minds the impure imagery generated by the perusal of books of this character. We have met cases of disease in which painful maladies could be traced directly to this source.

Impurity of Speech.—It is not to be supposed that young ladies are by any means so remiss in this particular as the majority of young men, and yet we have had painful evidence of the fact that too often even young ladies who are looked upon as in the highest degree respectable allow themselves to indulge in conversation of a character which they would not like to have overheard by their mothers. We would not say that every young woman who indulges in loose conversation is guilty of vicious habits; but it is certain that a young woman who allows herself to utter unchaste words and joins with others in conversation upon impure subjects, if not already impure, is in the way to become so should a strong temptation present itself under favorable circumstances.

The habit which many girls have of talking familiarly about the boys, is an exceedingly detrimental one. It leads in the same direction as the habit indulged in by many coarse and vulgar young men who stand upon the street corners making lewd criticisms upon every passing female. "Out of the abundance of the heart the mouth speaketh," are the words of an inspired writer, and it is fair to conclude that a young woman who delights in conversation upon unchaste subjects is poorly fortified against the temptation to overt acts of unchastity.

Women of mature age as well as young girls are often guilty of this same practice. In one form or

another this "ghost of vice" often haunts the sewing-circle and the boudoir. Women who consider themselves immaculate often seem to enjoy nothing more thoroughly than the retailing of scandal and gossiping about the lapses from virtue of the sons and daughters of their neighbors.

Lapses from virtue, in women as well as men, begin with mental impurity. A young woman who allows her imagination to run riot in lewdness is in a fair way to become impure in deed as well as thought. Man, even when most debased, loves to regard woman as chaste and pure in mind as well as body, and a woman cannot consider herself in the strictest sense pure unless she reaches this high ideal. Even listening to impure conversation without participation in it is demoralizing and destructive to purity, as the mind accustomed to hear words of unchaste and impure meaning unconsciously acquires some tolerance not only of the language but of the actions which it signifies. The society of women whether young or old who indulge in unchaste conversation, should be shunned as one would avoid the vicinity of a rattlesnake or a man sick with the plague. The moral disease engendered by this contagion of vice is far more deadly than any physical malady from which the body can suffer, yet these inoculators of vice are often admitted to the best circles of society, and the moral vaccination to which girls and young women who come under their influence are subjected, is much more certain to "work" and to develop in some foul disease in the victims than a vaccine inoculation for kine-pox.

The Immoral Dance.—Notwithstanding the apologies which have been made for dancing by clergymen in high positions, the impression is becoming each year more and more fixed in the minds of thoughtful people that dancing is in the highest degree demoralizing in its tendency. This is especially true of what is known as round dancing, and particularly of the different varieties of the waltz. Recently, Prof. Welch, a popular dancing-master of Philadelphia, after having been for many years engaged in his profession and having the widest opportunities for observation of the effects of the waltz, speaks out against it in the following decided terms:—

“I have watched closely and thought deeply on the subject, and now I have no hesitation in saying that the waltz, under whatsoever name it may go, for the time being is immoral. It is the only dance that decent people protest against, and I am happy to say that there still remain numbers of careful fathers who will not allow their daughters to dance it, although a vast proportion of the fashionable and a majority of the middle and lower classes do not seem as yet awakened to its iniquity. Ten or fifteen years ago the waltz was not so objectionable as at present. Dancers of to-day come in altogether too close contact. In the olden time a gentleman merely touched a lady's waist, at the same time holding her right hand in his left. Now he throws his arm clear around her form, pulls her closely to him, as though fearful of losing her, brings his face into actual contact with her soft cheek, and, in a word, hugs her. Such action is altogether too familiar, but still custom and society

sanction it, and instead of improvement for the better, we see year after year a marked advance in the improprieties of the dance. In the old days the waltz was comparatively modest; now it is just the reverse, and the waltz is calculated to do more injury to the young than many of the vices that are preached against from the pulpit and deeply deplored in private life.

"I have made it my practice for years to attend parties in order to keep pace in my teachings with the popular demand. I have no hesitation in saying that I attribute much of the vice and immorality now prevailing to the insidious influences of the waltz. This may seem an overstraining of the point, but it is my honest conviction. I tell you that in the higher circles, young ladies at parties and balls are absolutely hugged—embraced would be too weak to express my meaning—by men who were altogether unknown to them before the waltz began to inspire the toes of the dancers. Is this a pleasant sight to contemplate?

"Then in the lower classes, the license of the dance is much more shocking. I have seen couples so closely interlocked that the face of the man was actually in contact with that of the palpitating girl in his arms. I have seen kisses interchanged amid the whirl of the maddening waltz."

The writer of the above raises no objection to other dances than those characterized by what he terms "hugging," but in our opinion there is no place where the line can be drawn between harmless and harmful dancing when both sexes participate in the exercise. As a mode of exercise, we have no objec-

tion to dancing itself any more than to calisthenics or parlor gymnastics; but like card-playing, this form of exercise has been rendered dangerous and pernicious by the demoralizing influences with which it has been so long associated. We do not approve of even parlor dances when the participants are members of the same family. This may justly be compared to tippling or moderate drinking, which is pretty certain, sooner or later, to result in drunkenness. So parlor dancing eventually leads to public balls and all the evil associations connected therewith.

Some little time ago, the Chief of Police in New York City made the astounding statement that "three-fourths of the abandoned girls in that city are ruined by dancing." We might recount a large number of cases which have come to our knowledge in which innocent girls and young women have begun the downward course to shame and utter moral ruin in the dancing-school. In our opinion, this form of amusement ought to be discountenanced by respectable Christian people everywhere. Not only is it harmful on account of its immoral tendencies, but on account of the physical injury which frequently results. Thousands of young women in blooming health have laid the seeds of consumption in a cold contracted by going out of an over-heated ball-room in a light, fashionable dress, reeking with perspiration from the exhaustive heat and the vigorous exercise, into the cold air of a wintry night. Many cases of serious uterine disease have come under our care which were directly traceable to indulgence in midnight dancing with hips and waist burdened with heavy, trailing skirts, often

at a time when complete mental and physical rest should have been taken.

It is true that dancing is a healthful exercise. We do not object to it on the ground that when taken at proper hours and not too greatly prolonged it may not be harmless as a form of exercise; but these conditions are seldom secured, and dancing offers no advantages whatever over calisthenics or parlor gymnastics, which are wholly free from the dangers and evil consequences of the dance.

Diet.—As a rule, girls are more delicate in their tastes than boys. Taking less vigorous out-of-door exercise, their appetites are less keen and more fastidious. They are more fond of pastry and knick-knacks and care less for the substantials of diet. By the indulgence of this morbid taste, a large share of the young ladies of the day either actually become dyspeptics or lay the foundation for this disease while yet in their teens. We have no doubt that a large share of the nervousness which is so characteristic of American women has its foundation in these depraved appetites and the consequent impaired digestion. Imperfect elaboration of food leaves the blood deficient in nutritive elements and more or less impaired in quality by the addition of the crude products of impaired digestion. The impoverished blood is deficient in the elements which go to rebuild the brain and nervous system, and this portion of the body soon manifests its diseased condition by a weak and disordered action which is termed nervousness. Most of the neuralgia which is the bane of so many women's lives is but the cry of tired, impoverished

nerves for more and better food. The same impoverished condition of the nervous system is undoubtedly responsible for much of the hysteria as well as other forms of nervousness with which the young women of the present day, especially the daughters of fashionable parents, are afflicted.

The habit some young ladies have of drinking vinegar in large quantities for the purpose, as they say, of making their complexions white, is in the highest degree detrimental to health. In fact, it is through the injury to the digestive organs that the supposed desirable results are obtained, the effect of the vinegar being to impoverish the blood and so produce an unnatural paleness of the countenance.

Tea and Coffee.—Some time ago, a friend sent us a clipping from a popular newspaper, consisting of an extract from a lecture delivered at Sheffield, Eng., in which a professor said, "The domestic, quiet life and habits of the Chinese owe much of their strength to the constant use of this beverage (tea)." This assertion the gentleman sending the clipping made the basis of an argument in favor of the general use of tea; but who ever heard before that the Chinese were particularly noted for placable, quiet tempers and domestic habits? About the first Chinaman we ever saw threw his flat-iron through a window, breaking two sashes of glass, because some little boys in the street were gazing in astonishment to see him sprinkle clothes with his mouth. The testimony of the eminent Dr. Bock, of Leipsic, is that "the snappish, petulant humor of the Chinese can certainly be ascribed to their immoderate fondness for tea."

Not long ago a lady patient said to us while undergoing an examination, "Now, doctor, do tell me what makes me so cross! I did not use to be irritable; but for two or three years I have been getting so cross and disagreeable that I do not see how my friends can endure me. I scold and fret without any cause whatever, and get out of patience with every little thing. Do tell me what is the matter." Having learned that the lady was in the habit of using strong tea, we attributed the irritability to that cause. She gave up the use of tea in a short time, and soon recovered her former equanimity of temper.

The use of strong tea and coffee by young ladies undoubtedly has much to do with the depraved condition in which the nervous system is found in at least nine out of ten of the fashionable young ladies of the present day. The use of these beverages not only directly impairs the nervous system through the narcotic principle which they contain, but creates a demand for other stimulants and narcotics, as alcohol, chloral, and morphine, which are frequently resorted to.

The use of these articles is so very common and their injurious effects so little appreciated, that we feel justified in introducing here a somewhat extended consideration of their character and influence on the human body, hoping thereby to cause a few of those who peruse these pages to take a resolute stand against them.

A correspondent writes that one of his neighbors daily drinks "four cups of tea at breakfast, four at dinner, and four or five at supper." He raises the

question whether his neighbor is not as bad a man from the stand-point of temperance as himself, who uses tobacco. The query is certainly a pertinent one, and there can be no question that the use of tea in the quantities described is quite as bad as the use of tobacco in the quantities in which it is usually taken. It does not seem to be generally understood that tea and coffee are poisons; but the experiments of a large number of scientists show most conclusively that they both contain a substance known as caffeine or theine which is capable of producing death in lower animals and human beings. One observer found that one-seventh of a grain killed a frog in a very short time. Five grains killed a good sized cat and also a rabbit. Death occurs in lower animals in a manner almost the same as that in which death occurs in poisoning from strychnia. Strong convulsions are produced with the arrest of respiration, and in a short time the heart ceases to beat. Tea contains about three per cent of theine; or more than thirteen grains to the ounce. Every pound of tea contains enough of this poison to kill fifteen hundred frogs or more than forty cats. One case is on record in which a fine horse belonging to an English army officer was killed by eating accidentally a small quantity of tea.

The largest dose of theine which is recorded as being taken by a human being, is twelve grains, which produced very dangerous symptoms, and with the addition of a few grains more would undoubtedly have proved fatal. Yet it is perfectly well known that half an ounce of tea containing six and one-half grains of the poison is often used in making a

strong cup of tea. Thirteen cups of strong tea would contain a little more than eighty-four grains of the poison theine, or an amount sufficient, in all probability, to kill three or four men.

If tea contains such a poison, why does it not produce fatal results more frequently than it does? may be inquired. We answer, Simply because a tolerance for the drug is established by use, just as in the case of tobacco. One-tenth of a grain of nicotine will kill a frog, and so small a dose as one-sixteenth of a grain has produced dangerous symptoms in a man; it has also been shown that the smoke from a half ounce of tobacco contains sufficient nicotine to produce death, yet sudden death from tobacco-smoking is not a very common result of the almost universal use of this poisonous drug. The wakefulness and increased mental activity which many persons experience from the use of tea are evidences of its poisonous character. The same thing is observed in cats and other lower animals when tea is administered to them in a little less than the fatal dose, or when a fatal dose has been given, and before the fatal effects make their appearance. The poor creatures manifest sometimes the wildest excitement.

These facts ought to be more widely known than they are, and if duly appreciated must have some influence in lessening the use of a beverage which under the guise of "the cup that cheers and not inebriates" has captivated almost the entire English-speaking world.

Late Suppers, Ices, etc.—One of the most damaging of all dietetic digressions is the fashionable

custom introduced into this country from abroad of taking supper at a late hour, some time between nine and twelve P. M. The articles eaten at this late meal are usually those of a highly indigestible character, such as pastry, ices, wines, confectionery, etc. The person who indulges in such midnight feasting on such unhealthful viands is certain to suffer the penalty of such transgression sooner or later in the remorse of indigestion or the pangs of a remonstrating stomach. A young lady whose digestive organs are, from her habits of life, less vigorous than those of a man, cannot with impunity indulge in such indiscretions as these. Her health will sooner or later become seriously impaired, and she will thereby become utterly unqualified for the performance of the arduous duties which devolve upon a wife and mother.

Too Much Meat.—The usual prescription which a young lady suffering from nervousness, impoverished blood, and general debility, gets upon going to a physician is, "Eat more meat; live upon beefsteak, mutton-chops, and roast beef." We consider such advice not only unnecessary but mischievous. A young lady who has ruined her digestion by late suppers, the use of strong tea and coffee and condiments, does not want more meat, but less knick-knacks. She does not require more beefsteak, but more oat-meal and less pastry. It is wholly unnecessary that she should consume a large quantity of roast-beef or mutton chop, but it is of the first importance that she should take a liberal supply of well-cooked fruits and grains and other simple articles of food. A young lady who is nervous already from overstimulation does not

want further excitation. Meat of all kinds, as every physiologist and observing physician knows, is stimulating, and should not be freely used by anyone whose nervous system is already overexcited and irritable.

The Use of Opium, Liquor, Chloral, and other Drugs.—On this subject we cannot do better than to quote a few paragraphs from another work by the author* in which the whole subject of stimulants and narcotics is considered at greater length than would be proper here:—

“Within the last few years the consumption of this narcotic drug has been increasing in this country to an alarming extent. Thirty years ago the amount of opium imported was about 130,000 pounds annually. To-day, according to the report of the chief of the Bureau of Statistics, it is not less than 400,000 pounds. Of this amount not more than one-fifth is used for medicinal purposes, leaving the enormous amount of 320,000 pounds to be disposed of by habitual users of the drug. The exact number of opium consumers cannot be determined with any degree of accuracy, as the devotees of the drug usually avoid disclosing the habit as much and as long as possible. Careful inquiries of druggists, and others likely to be the best posted, have elicited facts upon which it is perfectly safe to base the estimate that there are not less than 100,000, and very probably as many as 200,000, habitual opium-takers in the United States.

“The amount of opium consumed by an old opium-

* The “Home Hand-Book of Domestic Hygiene and Rational Medicine.”

eater is sometimes enormous. In one case under the writer's care, half an ounce of morphia was habitually taken as a single dose, and twice daily, with no more effect than would follow the administration of one-fourth of a grain to a person unaccustomed to its use.

"Probably the greatest of all causes of this enormous increase in the habit within the last few years is its reckless and uncalled-for use in medicine. It is the custom of many physicians to prescribe opium in some form for almost every ache or pain which they encounter in practice."

There is also evidence for believing that although women are much less addicted to the use of alcoholic stimulants than are men, the alcohol habit is steadily gaining ground among them, especially in what are supposed to be the higher circles of society. The jaded belle, worn out with the excesses of fashionable dissipation, seeks a renewal of her wasted energies in the deceptive influence of a "pick-me-up," and soon the habit is formed too strongly to be resisted. Every large city contains numerous places where women can obtain all kinds of liquor without letting the public into the secret. Often these "bars" for the special accommodation of women are ingeniously hidden behind a milliner's sign, or placed in a side room in connection with some fashionable dress-maker's establishment.

In looking for the causes of the appalling increase in female intemperance, we have been led to believe that one of the most important is the frequent recommendation of alcoholic drinks or mixtures as remedies by physicians.

Although it is a little more than a half-score of years since the introduction of chloral as a remedy; its use has become so general that cases of "chloralism" are by no means uncommon. The chloral habit threatens to become a rival of the opium habit, if it has not already become quite as extensive in its prevalence. In fashionable circles it is no uncommon thing for ladies to carry chloral bottles in their portmanteaus or work-baskets. As complete mental, physical, and moral demoralization are produced by this drug as result from the use of alcohol or opium.

The habit of continual dosing with one drug or another, practiced by thousands of ladies, cannot be too strongly condemned. We have met hundreds of cases in which the digestion had been wholly ruined by this pernicious practice, and several serious maladies established which were in large measure incurable. Mothers often make their children invalids for life by constant dosing with this or that remedy which has been recommended by a friend or newly advertised in the newspapers. The family medicine chest is a more dangerous piece of furniture in a home than a loaded shot gun or a keg of powder. The harm which has come from the popular notion that something in the line of medicine must be swallowed for every little ache or pain, is incalculable. Young ladies, mothers, and everybody else ought to know that drugs do not cure disease. Nature cures, if a cure is accomplished, and in the great majority of cases the regular or irregular nostrums taken into the stomach impede recovery instead of aiding the cure. When a person

feels somewhat "out-of-sorts," the proper thing to do is not to swallow a few doses of this man's "pills," or that man's "tonic," or some old lady's mixture, but to carefully scrutinize the habits, and thereby ascertain the cause of the indisposition. When this is discovered, its removal will be speedily followed by a disappearance of the morbid symptoms.

EXERCISE.

At the present time, little attention is paid by women to physical culture. In fact, the idea of muscularity seems to be in some way connected with coarseness, and the popular idea of female beauty does not include a good physique, whatever else it may demand. In ancient Greece the physical training of women was considered as important as that of men. We read in the history of those ancient times of the exploits of female gladiators, and women were frequently found contending for prizes in the athletic sports which were so popular at that age of the world.

The physical inferiority of women is much more marked in civilized than in uncivilized countries. Among barbarous nations the difference between the physical development of men and women is far less than that observed among civilized people. This is undoubtedly due to the fact that the mode of life among barbarous nations is such that the females are required to perform quite as much daily physical labor as the males. Among some nations, in fact, a great portion of the labor is done by the females.

The last remark is also true of some lands called civilized. For instance, travelers in Italy record that it is not an uncommon sight to see a man going to market with a cart loaded with vegetables drawn by a team consisting of a donkey and his muscular wife harnessed up together. One traveler reports having seen a woman and a cow yoked together before a cart in one of the countries of continental Europe. Women growing up under such conditions would not be likely to be lacking in the matter of physical development, although they might suffer for want of symmetrical development.

In England and America, however, but particularly in this country, and especially in cities and towns, girls as a rule are found to be decidedly lacking in physical development. Observe the students of a female seminary as they pass along toward their homes at the conclusion of their hour of study. Notice how few possess shapely bodies, a strong, elastic, vigorous step, well developed waists, plump arms, broad backs, and a full chest. How rare it is to see a lady who has a good walk or a graceful carriage! The majority of young ladies whom we meet upon the streets have narrow backs, flat chests, round shoulders drooping forward, thin necks, scrawny arms, waspish waists, and an awkward gait. The ruddy bloom of health is rarely seen now-a-days except occasionally in some out-of-the-way country place. Girls are not to be blamed for their want of symmetry and numerous deficiencies in physical development if they have no opportunities to develop strong and comely forms. The fashion which requires them to

walk with their arms stiff, their elbows rigidly pinioned against their sides, renders a graceful carriage impossible and insures an imperfect development of the arms and shoulders, which are accordingly lacking in plumpness and unfitted for any occupation requiring muscular strength.

Girls who grow up in this way are certain to suffer seriously during their whole lives. The weak muscles, lacking vigorous exercise, must naturally result in weak hearts, weak lungs, weak stomachs, and weak nerves, and we might add, also, without departing from the truth, weak minds. It cannot be expected that such girls will produce anything else than nervous, feeble mothers utterly unfit for the performance of the duties of life.

The want of proper muscular development is one of the greatest causes of uterine disease in women. As previously shown, the organs of the pelvis are kept in position chiefly by the agency of muscles which act upon the uterus and ovaries indirectly from above and below. If these muscles are never developed so as to acquire proper tone and firmness, it is inevitable that the organs which they should sustain will ultimately become displaced. Before the period of puberty, no danger could arise from this cause, but after this period, the increased size and weight which the pelvic organs acquire, renders them liable to become displaced if their natural supports are not maintained in a vigorous condition. The general complaint of back-ache which is almost universal among women, would seldom be heard if they acquired

proper physical development during the period of growth.

That there has been a very considerable decline in the muscular development of women within the last few years is evident to all who have made any observation on the subject. Our grandmothers thought nothing of walking five or ten or even twenty miles a day; but how many women can be found at the present time who feel equal to the task?

The physical training of women ought to begin in early childhood. The school is the proper place for a systematic course of training. In order to secure the best results, the same course must be carried out at home to a greater or less extent. Regular, systematic, daily exercise should be taken, of such a character as to develop those parts of the muscular system which are weakest until they become proportionately strong, and then varied in such a manner as to secure equal development of the whole muscular system. The good results which would accrue from such a course of training as this, provided it could be made general among the girls of the present generation, is incalculable. One result would undoubtedly be the production of a better race of men in the succeeding generation. There is evidence for believing that a mother possessed of a vigorous physical development is more likely to give birth to children of large mental capacity than those whose physical development is below par. The Sandwich Islanders have a proverb which is particularly significant in this connection: "If strong be the frame of the mother, her sons will make laws for the people." Many of the great

men of this nation, if not most of them, have had remarkable mothers, although the father was in many cases not at all above the average.

Thousands of breakdowns in mothers during the bearing or the rearing of their children would be saved by previous physical development. We have met many mothers who were suffering with local disease which they attributed to the carrying of a baby or to being upon their feet, or to some other similar muscular taxation which would have been regarded as of no consequence if the muscles had been previously prepared by proper training.

Women who have already attained to maturity and find themselves suffering in consequence of inattention to physical culture in their early years may do much by pursuing a course of physical exercise of such a character as will be likely to remove the physical disability. That much can be done even late in life is very clearly shown by the results obtained by Prof. Maclaren, in the training of students and others during a period of from a few months to two or three years. A case was recorded in which a man who had attained maturity long before, had been actually made to increase his dimensions in every particular. In one case a man thirty years of age increased one-half inch in height and proportionately in breadth of chest and in the dimensions of other parts of the body. In cases in which the development of the body has been seriously neglected, special forms of exercise are sometimes necessary to bring up the weak parts to a degree of development proportionate with the others. It is not necessary, however, that

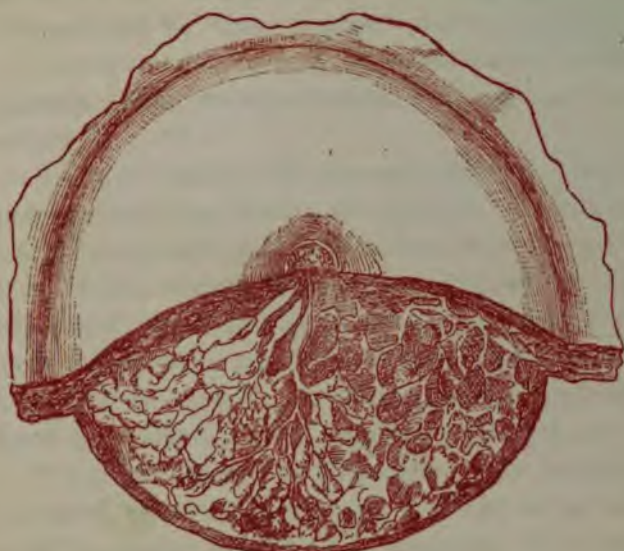


Fig. 1.

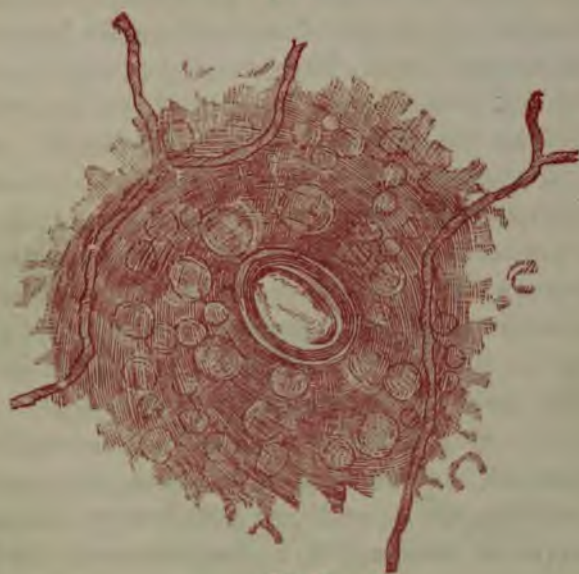


Fig. 2.

extensive or other than very simple apparatus should be employed for this purpose. Indeed, a small pair of wooden dumb-bells and clubs, with such other appliances as can be obtained in any home, are amply sufficient.

However useful and necessary may be calisthenics and various other forms of exercise, the fact should not be overlooked that useful labor and the performance of the various household duties, are among the very best forms of exercise and the best possible means of securing a good physical development. On this subject Miss C. E. Beecher some years ago offered the following very suggestive thoughts:—

“Our land is now full of motorpathic institutions, to which women are sent at great expense to have hired operators stretch and exercise their inactive muscles. They lie for hours to have their feet twiggged, their arms flexed, and all the different muscles of the body worked for them, because they are so flaccid and torpid that the powers of life do not go on. Would it not be quite as cheerful and a less expensive process, if young girls from early life developed the muscles in sweeping, dusting, starching, ironing, and all the multiplied domestic processes which our grandmothers knew of? The woman who did all these, and diversified the intervals with spinning on the great and little wheel, did not need the gymnastics of Dio Lewis or the Swedish Movement Cure, which are really a necessity now. Does it not seem poor economy to pay servants for letting our muscles grow feeble, and then to pay operators to exercise them for us? I will venture to say that our

grandmothers went over in a week every movement that any gymnast ever invented, and went over them with some productive purpose, too."

The muscles, perhaps, more than any other organs of the body, depend for their health upon regular, systematic, adequate, and proper exercise. By exercise, the muscular fibres are made to contract, and in doing so, the old, stagnant, venous blood is squeezed out, and new, fresh, invigorating, vitalizing blood takes its place. By this means their vital activities are quickened and their growth increased. There is evidence for believing that muscular fibres do not increase in number in the voluntary muscles; but it is certain that they increase very materially in size and in firmness, and hence in strength. The strength of a muscle depends upon the individual strength of each of its fibres, as its strength is but the combined strength of its component parts. If each fibre becomes large, firm, and strong in consequence of use, the whole muscle becomes so; and that this is the case we have abundant evidence in the ponderous right arm of the blacksmith, which outgrows the other in consequence of constant exercise in swinging a heavy hammer. The lower extremities of a ballet dancer become developed in a proportionately large degree, from the trying exercise to which they are accustomed.

Nature never attempts to maintain a useless organ, and almost as soon as an organ is not used she sets to work to demolish it; or at any rate she wastes no time in endeavoring to keep it in repair when it is not needed, or at least is not used. This is true all

through the vital economy, and is nowhere more clearly seen than in the muscular system. A disused muscle soon becomes thin, pale, relaxed, weak; and after a time a change begins which is termed fatty degeneration. Nature does not think it worth while to keep so much valuable nitrogenous matter lying idle, and so she sets to work taking the muscle to pieces and carrying it away little by little for use elsewhere, depositing in place of the muscle substance little particles of fat until the whole muscle is changed to fat. This change often occurs in cases of paralysis; and when it has been completed, restoration of the function of the muscle is impossible.

How to Take Exercise.—It is not sufficient to simply take exercise indiscriminately and without reference to the object for which it is taken, the manner, time, etc. It must be taken regularly, systematically, at proper times, and in proper amount. Perhaps we cannot do better in treating this subject practically than to ask and answer some of the most important questions relating to exercise.

1. *When is the best time to exercise?* There is a popular theory extant that exercise taken early in the morning has some specific virtue superior to that taken at any other time. After careful observation on the subject we have become convinced that this popular notion is a mistake when adopted as a rule for everybody. For many engaged in professional duties, especially editors, authors, teachers, and others whose vocations keep them mostly in-doors, the morning may be the only time when exercise can be taken conveniently; and if not taken at this time

it is likely to be neglected altogether. Such persons, unless they are laboring under some special derangement of health, as dyspepsia or some other constitutional malady, would better by far take the morning walk or other form of exercise than to take none at all. However, we are pretty well convinced that for most persons the middle of the forenoon is a much better time to take any kind of active or vigorous exercise. In the morning, the circulation is generally weakest and the supply of nerve force is the least abundant. In the forenoon, when the breakfast has been eaten and digestion has become well advanced, the system is at its maximum of vigor; hence if the individual is at liberty to choose his time for exercise, this should be his choice.

For poor sleepers, a half-hour's exercise taken in the evening not long before retiring will often act like a soporific, and without any of the unpleasant after-effects of drugs.

Vigorous exercise should never be taken immediately nor within an hour after a meal, and should not be taken just before eating. Disregard of this rule is a very common cause of dyspepsia.

2. *What kind of exercise shall be taken?* The answer to this question must, of course, vary with the individual. Exercise must be modified to suit the strength, the age, and even the tastes of the individual. As a general rule, persons who take exercise for health are apt to overdo the matter, the result of which is damage rather than benefit. For most persons there is no more admirable and advantageous form of exercise than walking; but many find walk-

ing simply for exercise too tedious to persevere in it regularly. Such will find advantage in walking in companies, provided care is taken to avoid all such questionable diversions as walking matches or any kind of exercise in which there will be a strife which will be likely to excite to excess.

Horseback riding, for those who ride well and enjoy this form of exercise, may be of great benefit. It is not so well suited for ladies as for men, however, on account of the awkward and unnatural manner in which fashion compels them to ride. It is impossible for a lady to ride with the same degree of comfort, ease, and grace that her male companion may, on account of the one-sided way in which she sits in the saddle. In many countries ladies ride in the same fashion as men; with them, of course, this objection does not hold.

Horseback riding is an excellent aid to digestion, and often effectually relieves habitual constipation of the bowels.

Carriage riding is worth very little as a form of exercise except for feeble invalids, for whom the gentle swaying of the vehicle and the excitement of viewing objects seldom seen may be sufficient and appropriate exercise. Riding in a lumber wagon over a corduroy road is about the only kind of carriage riding which is worth speaking of as exercise for people in ordinary health.

Skating, rowing, dancing, and most other exercises of the sort, are more often harmful than otherwise, because carried to excess and associated with other evils of a pernicious character. Calisthenics,

for school-children and young students, is a most admirable form of exercise. It is also well adapted to invalids who are unable to walk more than a short distance at a time. Full directions for the use of calisthenics, or gymnastic exercises, are given in a chapter devoted to the subject. In our opinion, every family ought to be fitted out with all the conveniences for parlor gymnastics. They afford not only healthful exercise but a large amount of excellent amusement for the little folks.

The bicycle is a form of exercise too important to be overlooked. We have carefully tested this means of exercise, and believe it to be an exceedingly valuable measure for those whose employments are sedentary and whose time for exercise is limited. One of the special advantages of the bicycle is the fact that it is an out-of-door exercise. It is exhilarating, even fascinating, when one has mastered the art of balancing his body upon the moving machine.

It should be remembered, however, that the bicycle, as well as every other means of exercise, may be abused. Persons suffering from Bright's disease of the kidneys must either avoid bicycling altogether, or engage in the exercise with the greatest moderation and discretion. Those who have not been accustomed to active exercise must be careful to avoid overexertion.

For many persons, as before remarked, no form of exercise is more beneficial healthwise than some kind of physical labor. For ladies, general housework is admirably adapted to bring into play all the different muscles of the body, while affording such a variety of

different exercises and such frequent change that no part need be very greatly fatigued. There are thousands of young ladies pining under the care of their family physician in spite of all he can do by the most learned and complicated prescriptions, for whom a change of air or a year's residence in some foreign clime, or some similar expensive project, is proposed, when all in the world that is needed to make the delicate creatures well is to require them to change places with their mothers for a few weeks or months. Let them cease thrumming the piano or guitar for a time, and learn to cook, bake, wash, mend, scrub, sweep, and perform the thousand and one little household duties that have made their mothers and grandmothers well and robust before them. We made such a prescription once for a young lady who had been given up to die of consumption by a gray-headed doctor, and whose friends were sadly watching her decline, and in six weeks the young miss was well and has been so ever since; but we entailed her everlasting dislike, and have no doubt that any physician or other person who should adopt the same course in a similar case would be similarly rewarded.

There is no gymnasium in the world which can more certainly secure excellent results from exercise than the kitchen, the wash-room, and the garden. These are nature's gymnasia. They require no outlay for special appliances, and are always fitted up for use.

In ancient Greece, in the palmy days of that empire, physical training was considered as much a part of the necessary education of young men and women, as their mental culture. Every inducement was of-

ferred to them to make themselves strong, vigorous, and athletic. Their schools were called *gymnasia*, on account of the attention given to gymnastics. Small waists and delicate forms, white, soft, helpless hands and tiny feet were not prized among the pioneers of civilization. The mothers of heroes and philosophers were not pampered and petted and spoiled by indulgence. They were inured to toil, to severe exercise. Their bodies were developed so as to fit them for the duties of maternity and give them constitutions to bequeath to their children which would insure hardihood, courage, and stamina in the conflict with the world to obtain a subsistence, and with human foemen in the rage of battle. The women developed by this system of culture were immortalized in marble, and the beauty of their forms has been the envy of the world from that day to this; yet no one seems to think of attempting to gain the same beauty in the same way. It might be done: there is no reason why it cannot be; but the only way is the one which the Grecian women adopted,—physical culture.

Mens sana in corpore sano was the motto of the ancient Greeks; and the experience of every day shows that the person with strong muscles and good digestion, with fair intellectual abilities, is the one who wins the goal in the strife for wealth and fame and all that men seek after, and the same is also true of women. "A sound mind in a sound body" is as necessary for assured success in life in the nineteenth century as when the sentiment was first inscribed upon the gates of the temples in ancient Greece.

Necessity for Unrestrained Action.—A muscle tied up is rendered as helpless as though it were paralyzed. When a muscle acts, it does so by swelling out in thickness, while contracting in length. From this it will be evident that if a tight band is put around a muscle in such a manner as to prevent its expansion or increase in thickness, it cannot possibly act. Hence, a fundamental requisite of healthful muscular action is entire freedom from restraint. Unrestrained action is indispensable to complete action and perfect development. When a broken arm is done up in a splint for a few weeks, upon removing the bandage it is usually found that the arm has shrunk in size; the muscles have wasted, partly in consequence of pressure, and partly on account of the enforced inaction of the muscles. The very same thing happens wherever pressure is brought to bear upon the muscular tissues. A ring worn upon a finger causes atrophy, or wasting of the tissues beneath it. By placing an elastic band around soft tissues they may be absorbed altogether, in consequence of the pressure. This action has been taken advantage of for the removal of tumors in certain parts of the body.

Physical Training of Young Women.—The tendency to physical decline in young women has become so marked that we believe it to be the duty of every mother to give careful attention to the physical training of her daughters. Mothers ought to watch with care the development of young girls, and correct at once any manifest defect, such as drooping

shoulders, flatness of the chest, curvatures of the spine, etc.

Among the most common causes of round shoulders in girls are bad positions occupied in sitting, standing, and lying during the hours of sleep. On Plate F we have introduced a few figures which show incorrect attitudes contrasted with correct and healthful ones. Among the best means of overcoming these deformities are the various calisthenic exercises, a few of which are shown on Plate XI. The dumb-bell and club exercises are particularly useful. Both these appliances should be of wood and very light, weighing not more than one or two pounds each.

The same exercises also strengthen the muscles of the back and thus act as a preventive of spinal curvatures and weak backs; and if persevered in and properly adapted to the conditions of the individual case, are exceedingly useful means of curing curvatures due to muscular weakness or unsymmetrical muscular development. In addition to these exercises, special forms of exercise, such as carrying a heavy book upon the head, hanging by the hands, and suspension by the head and shoulders with a suitable apparatus are useful and essential in extreme cases. It should be borne in mind that in cases of spinal curvature the higher shoulder is the weaker one, and the curvature of the spine toward that side of the body resulting in the elevation of the shoulder above that of the opposite side, is due to the preponderance in strength of the muscles of the latter. To correct the deformity by exercise, the weak side must be developed up to



Fig. 1.



Fig. 2.

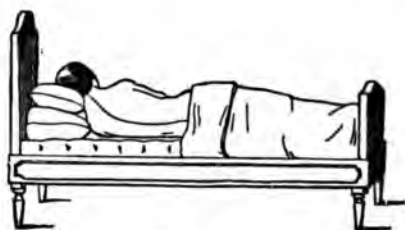


Fig. 3



Fig. 4.

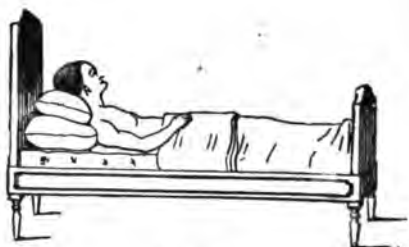


Fig. 5.

equality with the other by giving it the greater amount of exercise.

A home-made gymnasium in which a variety of healthful exercises can be taken may be easily constructed in a garret or even in the sleeping-room, where it will be convenient for use. Two ropes suspended from a beam in the ceiling and furnished with a ring at the free end of each, a pair of rubber tubes each about two feet long furnished with hooks at both ends and rings which can be attached and detached at pleasure, and the wooden dumb-bells and clubs before mentioned, furnish all the apparatus necessary for a great variety of healthful exercises. Light gymnastics ought to be taught and practiced in every school, and particularly in young ladies' seminaries and boarding schools.

A half-hour's daily practice in a home gymnasium will develop the chest and waist to a wonderful degree in the course of a few months. In the treatment of numerous cases of disease of various sorts in girls and young women we have found physical training a most valuable accessory, and in many instances have regarded it as the chief factor in securing the rapid and complete recovery which we have usually been able to obtain in this class of cases.

Women do not naturally possess so largely developed a muscular system as men, and microscopical examination shows the muscular fibres to be smaller in size. Nevertheless, the smaller size and consequent closer connection with the blood supply give to them an increased power of endurance which compensates for the lack of ability for so great a spasmodic

manifestation of force as the male muscle fibre. Prof. Haughton claims to have demonstrated by direct experiment that "the muscles of women are capable of longer continued work than those of men, although inferior to them in force exerted for a short time." In the long run, then, woman ought to be the peer of man muscularly as well as mentally; and if she is not, it is simply because she allows her physical powers to degenerate by lack of use.

THE QUESTION OF WOMAN'S DRESS.

The dress of woman has for years been so generally discussed that it has almost come to be a hackneyed subject; but we have sufficient evidence that the agitation of this question is still required for the enlightenment of the people to justify us in giving it a somewhat conspicuous place in these pages. In discussing the subject here we shall take the liberty to draw freely from what we have elsewhere written on the same subject, without stopping to give credit in each case.

The extravagances of fashionable dress, together with its almost total disregard of health and real comfort, have become so apparent to all sensible persons that few can be found who are willing to risk their reputation for soundness of mind by attempting to defend its absurdities. It would be an outrage against the intelligence of civilized womanhood to suppose that the devotees of fashion are ignorant of the fact that the daily homage which they pay to their goddess is at the expense of real physical com-

fort, and often of health and of life itself. The evils of improper dress have been so often exposed, and the sad results so faithfully depicted, that none can be in innocent ignorance. The shackles of a slavery worse than any political despotism holds one-half of civilized humanity in a duration more galling, more enervating, and more deplorable than Egyptian bondage, notwithstanding the stirring appeals which have been made to them by eminent physicians of their own sex, as well as others.

Some noble minds are asserting their liberty and claiming the right to consider first the demands of health and comfort, irrespective of the dictum of Dame Fashion; and we must continue to wage unceasing warfare against the many harmful customs which Fashion imposes upon her followers until every woman of noble mind, elevated tastes, and sound reason, shall be compelled to see the importance of the subject, and be led to emancipate herself from so irksome a bondage.

The natural requirements for dress are the following:—

1. Modesty requires that the body should be clothed.

2. Protection against sudden changes of temperature is required for the maintenance of health.

The dusky savage who roams the tropical wilds of Central Africa finds no necessity for clothing. Modesty is to him unknown. The genial climate of his native forests insures him against vicissitudes of temperature, and so he lives as he was born, protected only by the swarthy cloak which nature gave him.

Civilization creates the first requirement for clothing, and the varying temperatures of the temperate and frigid zones create the second.

Essential Qualifications of Healthful Clothing.

—In order to properly meet the wants of the body in fulfilling the above requirements, clothing must possess the following qualifications:—

1. It must allow unrestrained action of every organ of the body.
2. It must secure equable temperature of all portions of the body.
3. Its weight must be as light as possible without sacrificing other necessary qualities.
4. It must be so adjusted to the body as to be carried with the slightest possible effort.

In view of the above principles, let us examine some of the fashionable articles of dress.

Fashion has graciously spared one-half of her subjects the pains and follies which she has heaped in double portion upon the other half. With the exception of tight boots and tight cravats,—both of which are now out of fashion, fortunately,—little fault could be found on the score of health with most of the garments worn by men.

It was, indeed, reported some time since by the lady correspondent of a prominent American newspaper, who was writing from the metropolis of England, that in that portion of the world creatures calling themselves men are sometimes found to be addicted to the feminine custom of corset-wearing; but these sickly specimens of humanity are hardly



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

PLATE G.

worthy the name of men, and may be left out of the consideration.

Corsets and Tight-Lacing.—The baneful effects of corset-wearing are now so well understood that few women will venture to deny that the practice is harmful, but they endeavor to shield themselves by declaring that they are sure *their* corset does them no harm, that it is very loose, etc., etc. We scarcely ever met a lady who would admit that *her* corset was tight, and we have had occasion to speak with hundreds of ladies on this point in making medical examinations.

We read the other day in a newspaper of a young woman who actually broke a rib in the attempt to gain another half-inch on her corset string. She well deserved the accident, no doubt; but the chances are ten to one that she would assert in the most positive terms, if expostulated with about the matter, that her corset was "quite loose," and to demonstrate the matter would show you how much more she could pinch up when she tried, or something of the sort. The fact is, ladies do not really know when their clothing is tight about the waist and when it is loose. The tissues have been so long under pressure that they have lost a good share of their sensibility, and clothing really seems loose to them which to a man would be so uncomfortably tight as to make him utterly wretched.

Figs. 1 and 3 of the accompanying plate (Plate G) show the proportions of the female form as fashioned by nature. Figs. 2 and 4 show the form when deformed by the pernicious practice under considera-

tion. Plate X also shows the same points very clearly by contrasting the form of a modern belle dressed in Parisian fashion, with the splendid form of the Venus of Milo. It will be observed by careful inspection of these figures that the thorax when in a natural condition is cone-shaped, the base of the cone being below, while in the thorax of a person whose waist has been compressed and distorted by the ruthless hand of fashion by means of the corset, tight belts, and waistbands, the reverse is the case. Let every woman consider carefully the injury which results from this artificial and totally unnatural constriction of the waist.

The object of the arrangement referred to is to give ample room for the action of the delicate vital organs which are carefully lodged within this bony cage for protection. Chief among these are the *lungs*, the *heart*, the *liver*, the *diaphragm*, and the *stomach*. In the healthy performance of their functions, these organs require a considerable degree of motion. With every act of respiration, the lungs alternately expand and contract; the diaphragm moves up and down; the stomach and liver have the same motion. Every beat of the pulse is accompanied by a change in the position of the heart. The size of the stomach necessarily varies greatly, being full after a meal, and nearly empty at other times.

The Corset a Cause of Consumption.—How does compression affect these various organs and their functions? The corset, with its inflexible stays and hour-glass shape, grasps the expanding lungs in their lower part like an iron vise and prevents their

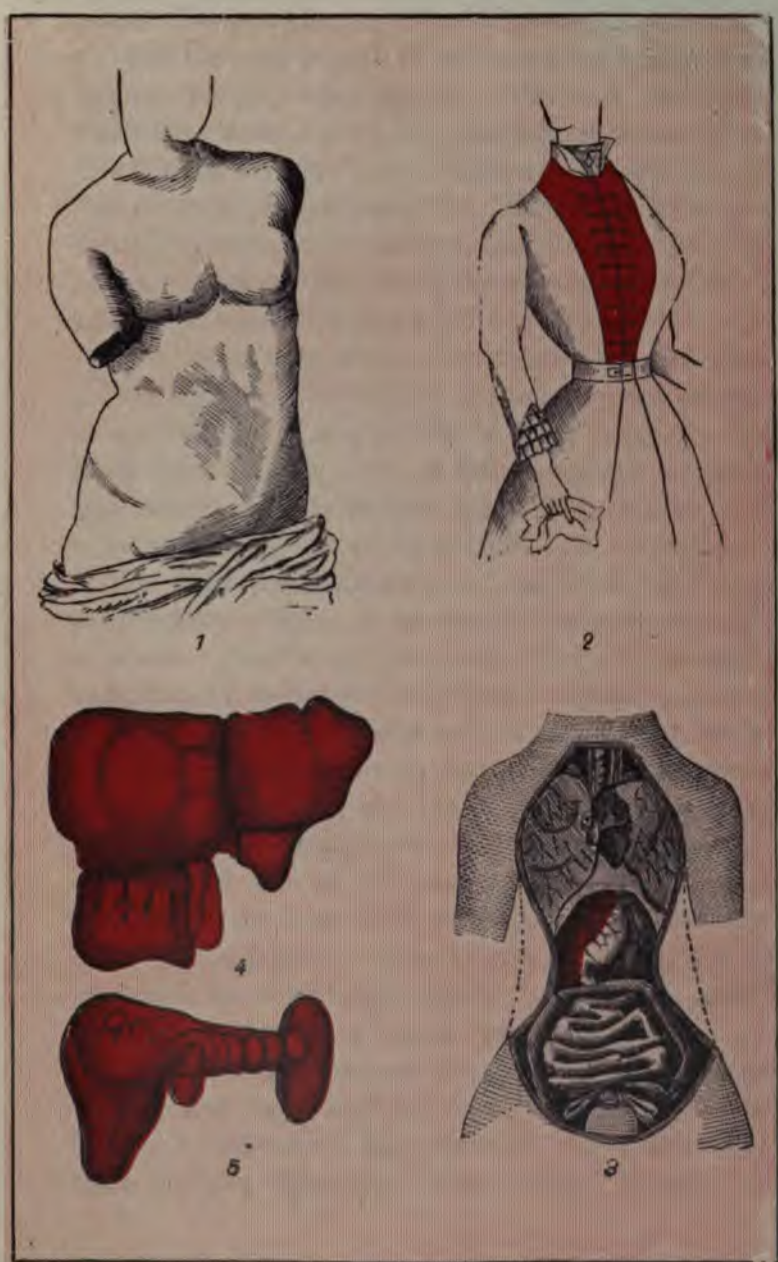


PLATE X.

proper filling with air. The lungs are thus crowded up into the upper part of the chest and are pressed against the projecting edges of the first ribs, upon which they move to and fro with the act of breathing. The friction thus produced occasions a constant irritation of the upper portion of the lung, which induces a deposit of tuberculous matter, and the individual becomes a prey to that dread disease, consumption—a sacrifice to a practice as absurd as pernicious.

The lower part of the chest being narrowed, thus preventing proper expansion of the lungs, the amount of air inhaled is insufficient to properly purify the blood by removing from it the poisonous carbonic acid which gives to impure blood its dark color, and is so fatal to the life of all animals. In consequence of this defective purification of the blood, the whole body suffers. None of the tissues are properly kept in repair. They are all poisoned. Particles of gross, carbonaceous matter are deposited in the skin, causing it to lose its healthy color and acquire a dead, leathery appearance and a dusky hue. The delicate nerve tissues are poisoned, and the individual is tormented with “nerves,” sleeplessness, and fits of melancholy.

We wish also to call attention to the important fact that continuous pressure upon these parts may cause such a degree of degeneration of the muscles of the chest as to seriously impair the breathing capacity. Unused muscles waste away, as already observed; and when pressure is applied in addition, the wasting and degenerating become still more marked. This is exactly what happens with those who wear their clothing tight about the waist. This is the

reason why ladies who have been accustomed to wear corsets declare so emphatically that they "could not live without them," that they feel when their corset is off as though they "should fall down into a heap."

While the ribs suffer the least of any of the organs of the chest from the absurd custom which fashion has imposed upon the gentler sex, tight-lacing the waist and encasing the body in a vise of stays of bone or steel, is of positive and often incurable injury to this part of the vital economy.

The bony ribs do not join the sternum or breast-bone directly, but indirectly through the medium of flexible cartilages, an arrangement which gives to the thorax the power to expand and thus enable the lungs the better to perform their important functions. Careful study has shown that this flexibility of the costal cartilages is due to their constant exercise. Day and night, sleeping or waking, twenty times a minute, these flexible parts are bent and allowed to return again to their natural position. This constant bending and unbending allows them no opportunity to become stiff and unyielding like the bones. But when the chest is imprisoned in a corset, this constant movement becomes impossible; and the consequence is that a process of stiffening is set up, and after a time the once flexible, yielding cartilages become as rigid as the rest of the ribs. The inevitable result of this change is a permanent limitation of the movements of the lungs. It becomes impossible for them to expand except to a limited degree upward and downward. Lateral expansion is as impossible when the corset is laid aside as when it is in place.

The deformity, which was at first temporary, has become permanent. There are thousands of delicate ladies all over the land whose costal cartilages have been thus changed through their own willful abuse of their bodies, and who will undoubtedly go down into premature graves in consequence, in spite of all that the most skillful physicians can do for them.

The action of the lungs ought to be wholly unrestrained, allowing the pure air with its life-giving oxygen to penetrate to the smallest extremity of every air-tube, and fill to its utmost capacity every delicate cell. The chest ought to be capable of expansion from two to five inches,—even greater expansion is attainable. But if you put a tape-line around one of these corset-stiffened chests you will be unable to obtain more than a scant quarter-inch of difference in measurement between the chest when empty and when filled to its utmost capacity. We have often tried the experiment when making physical examinations of the chest, and though the patient is almost always anxious to do her best, in order to demonstrate if possible what every lady will eagerly contend for, that her corset never did her any harm because it was worn so loose, and so draws up her shoulders to her utmost and makes a desperate attempt to swallow more air than there is room for, we have often found that the expansion of the sides of the chest was so slight as to be imperceptible. If tight-lacing did no other harm than this, we should certainly wish to condemn it in the strongest terms we could find language to express; and we cannot help feeling sometimes that it is a great misappropria-

tion of money to support an army of missionaries among the inappreciative and degenerated inhabitants of African jungles and other heathen countries, who value human life so little that they feed their superfluous little ones to the crocodiles, and sacrifice a score of women to commemorate the death of a king, while there are so many thousands, perhaps millions in civilized lands who are sacrificing lives which might be a hundred-fold more useful, in ways equally absurd and senseless. The homage paid by millions of ladies to the latest style of corset is a grosser form of idolatry than the fetich worship of the natives of African jungles.

Heart Disease Caused by Tight-Lacing.—

Another sufferer is the heart. The dark, impure venous blood goes rushing from the heart to the lungs for purification. The lungs are so compressed that only a portion of the blood can get through. The remainder is crowded back into the heart, causing enlargement of that organ, and heart disease. The individual then suffers from flutterings and palpitations of the organ, and a constant fear lest sudden death may cut short her career.

But this damming-back process extends far beyond the heart. The venous blood, being crowded into the heart, finds its way back into the veins, and thus to the head, causing congestion of that organ, with all its dullness, pain, nervousness, loss of memory, and mental inefficiency.

The diaphragm, one of the most important muscles of inspiration, is crowded up into the chest by the upward pressure of the abdominal organs, which are

squeezed out of place by the vise which grasps them. This makes breathing still more inefficient, and the expansion of the cavity of the chest less complete, adding greatly to the evils already mentioned.

Corsets and Dyspepsia.—The stomach is located just beneath the point where the pressure of the corset is greatest. It must either suffer from constant, unyielding compression, or else it must be displaced either upward or downward. In the first case, it encroaches upon the lungs, and in the second, it presses upon delicate organs below, so that the result is equally bad in either case. This constant compression and displacement disturbs the function of the organ, and thus produces dyspepsia with all its dire consequences. Experiments upon animals show that pressure upon the stomach will produce death quicker than almost any other means. A sharp blow upon the stomach will often produce instant death. Displacement and distortion of the stomach are also induced, as may be seen by reference to Fig. 6, Plate X.

Tight-Laced Fissure of the Liver.—We once found in Bellevue Hospital, New York City, a woman who was suffering under a complication of maladies which evidently had their origin in the foolish practice of tight-lacing to which she had been addicted. On making an examination of the internal organs, we were amazed to find the liver presenting itself just above the hip bone, its normal position being entirely above the lower border of the ribs. Further examination revealed the fact that in about the middle of the organ there was a constriction, or fissure, nearly dividing it in two, which had been produced by habitual

lacing. The function of the organ had been so greatly interfered with that it had failed to remove the biliary elements from the blood, and they had been largely deposited in the skin, making the latter anything but beautiful, although the woman was not advanced in years, and was naturally fair. Thousands of young ladies have cut their livers nearly in two in the same way. No wonder that they require rouge and French chalk to hide their tawny skins. Figs. 4 and 5, Plate X, represent very accurately the deformities of the liver produced by this foolish and inexcusable practice.

A physician of eminence, upon making a *post-mortem* examination of a woman who had worn heavy skirts suspended from her waist for many years, beginning the practice in early childhood, found the liver dragged down into the pelvis and entirely cut in two, the separate portions being only held together by a fibrous cord.

Numerous Other Evil Results.—The waist is naturally larger than the upper part of the chest. Its size is due to the contents of the abdominal cavity. If it is pinched and squeezed into one-half its natural size at one point, some other portion must be enlarged in order to give room for the internal viscera of the abdomen. This enlargement naturally occurs below the waist, giving that portion of the body an unnatural, ungraceful, and distorted appearance. Indeed, the practice distorts the whole body, giving it an hour-glass shape when there should be a graceful taper from the armpits to the hips. The noble matrons of Greece and Rome, in the sunny days of those empires, never possessed such misshapen forms

as modern fashionable belles contrive to torture their bodies into.

Tight-lacing and the corset are the most fruitful sources of a majority of the ills from which women especially suffer. The great increase of pressure brought upon the delicate organs which occupy the female pelvis, occasions displacement of those organs and all the resultant miseries.

More than one case is on record of young ladies who have applied the belt or corset so tightly that a blood-vessel has been ruptured and almost instant death has ensued.

If we should consider the remote effects of lacing the waist, we would find that nearly every internal malady may be either induced or greatly aggravated in virulence by this pernicious practice.

The Corset Not a Necessity.—"But I cannot live without a corset," said a lady when we expostulated with her for her persistence in wearing the objectionable article, "I need its support; I should fall down all in a heap without it. I feel so weak and helpless without something to brace me up." It is possible that such individuals do really feel better when encased in a framework of whalebone, steel, and cords, than when depending only on their natural resources for support. They have so long confined their yielding muscles in a rigid, unyielding case, that they have lost their strength and elasticity. Let a strong man strap his arm to a board and wear it constantly for a year. He will find it almost useless. Its muscles will be thin, flaccid, and powerless. The corset has the same effect upon the muscles of the

chest which are by nature designed to support the trunk. Will the muscles of the man's arm become strong by continuing to wear the board? Never; the only way to recover its strength is to throw away the board and use the weakened member. So with the corset. It is the cause of the condition which it is thought makes it a necessity. So long as it is worn, the muscles of the chest will be weak and lax. Throw it away, and begin to exercise the wasted muscles and they will speedily recover themselves. The mothers of Grecia's noble sons never wore corsets. They were equally unknown to Roman mothers. If the article was unnecessary for them, why is it so needful for modern women? If support for the bust is required, it can be obtained by better means than the corset. A short experience without it always results in its dismissal forever, when a fair trial is made.

Although the corset is the chief offender in constraining the healthy activity of the vital organs of the body, there are other articles and modes of dress which deserve attention on account of their interference with some of the bodily functions. When the leaders of fashion decreed that the previously indispensable crinoline must be discarded, the sensible part of the world rejoiced, thinking that Dame Fashion was really about to reform her ways. But such hopes were dashed to the ground when the next fashionable style of dress appeared. Formerly, fashionable ladies sailed along the streets like animated balloons, monopolizing the whole walk with their wide-spreading skirts. A few years ago the opposite ex-

treme was reached and fashionable ladies were to be seen wriggling along the street like competitors in a sack-race. Indeed, it seemed a marvel that locomotion was a possibility, so greatly hampered were the limbs by numerous heavy skirts drawn tightly back and fastened at the sides. Anything like graceful ease in walking was impossible. A Chinese wriggle was the result of the best attempt.

The motions of the arms are curtailed to an almost equal extent by the fashion of the garments about the shoulders. They are so made that it is next to impossible for the wearer to raise the hand an inch above the head. The arms are actually pinioned. Why not have the shoulders of ladies' garments made like those of men, which allow perfect freedom of motion to the arms? The more recent fashions are adopting this style, and we trust that the old style of cutting ladies' sacques and dresses will soon wholly disappear.

The elastic bands worn about the leg to keep the stocking in place, and sometimes used upon the arms to hold the sleeves up, are more harmful than is usually imagined. The long stockings worn by females bring the elastic just above the knee, where the large blood-vessels of the limb come near the surface and are in position to be compressed against the thigh bone in such a way as to impede the circulation. It is not to be wondered at that under these circumstances, in addition to the evil of thin stockings, and thin, tight shoes, there should seem to be a necessity for artificial calves, which we are informed on creditable authority have actually been employed.

Whether garters are elastic or inelastic, the effect is essentially the same. They interfere with the circulation of the blood in the lower limbs, and often produce varicose veins. Cold feet and headache are the ordinary results of their use. School girls suffer greatly from their injurious effects.

Fashionable Suicides.—If the number of deaths annually resulting from improper dress were accurately recorded, the aggregate would be absolutely appalling. A large percentage of these would be found to be due to inattention to the maintenance of a uniform temperature of the body. Fashionable attire separates the body into zones. The upper part of the chest and the feet and ankles are the frigid zones, while the lower part of the abdomen is the torrid zone. The feet and limbs are so far away from the centers of life and heat that they naturally require more clothing to maintain in them a temperature equal to that in other parts. The warm blood current loses much of its warmth in passing the whole length of the limbs, and so reaches the extremities only after being chilled. Instead of supplying the required extra clothing to these parts, fashion totally ignores the wants of nature and gives the limbs even less protection than other parts which need it less. The upper part of the chest is often exposed even to the eye. At best, it is usually covered only by a few thin layers.

Garments from the upper part of the body overlap those from the lower portion, below the waist, thus doubling the amount of clothing over the most vital parts—those least liable to suffer from cold. In

this way the natural heat of the parts is greatly increased, and much suffering is the result. Local congestions and inflammations find their exciting cause in this mode of clothing the body.

In addition to the many thicknesses occasioned by the overlapping of garments and bands, fashion adds a huge deformity behind in the form of a bustle, which is located just over the nerve centers which preside over the reproductive functions, and by the excess of heat thus engendered often occasions very great injury, which cannot always be remedied, even by years of medical treatment.

While the central portion of the body is thus burning with excessive heat, being covered with from seven to fourteen thicknesses, the limbs are allowed to go almost nude. One thin, muslin garment meeting an equally thin stocking below, supplemented upon the foot by a thin shoe, is often thought to be amply sufficient clothing for the limbs and feet, even when the mercury stands in the thermometer near zero. The arms are frequently little better clad, the sleeves of undergarments extending but a little below the shoulder.

Loose skirts are wholly inadequate to secure proper warmth to the limbs, even though they be multiplied, for the simple motion of the limbs in walking creates currents of air about them beneath the warmest skirts. The wind also dashes cold air upon them from below, sometimes even making skirts a disadvantage, rather than a protection.

To add still more to the unbalance of the temperature occasioned by improper clothing, heavy furs

are worn upon the chest and shoulders, where less artificial covering is really needed than at other parts.

If under so unequal a distribution of the heat of the body a woman escapes a score of such maladies as congestion of the brain, headache, neuralgia, torpid liver, dyspepsia, and consumption, besides the numerous ills peculiar to the sex, it is either because she is uncommonly "tough," or on account of a special interposition of Providence. But we do not believe that Providence ever works miracles to enable people to disregard his laws. The usual result is a chronic inflammation of all the internal organs of the pelvis and lower portion of the abdomen.

What Drags the Life out of a Woman?—

Those heavy skirts, varying in number from three to seven or more, all suspended from the waist, and pulling down upon the hips, are enough to drag the life out of a Hercules. A strong man would not endure for a single day one-tenth of the discomfort which a fashionable woman suffers every day of her life. It is useless for woman to think of rising above her present level while she is chained down by the burdens imposed by heavy, trailing skirts.

The unnecessary and injurious weight occasioned by superfluous length and number of skirts is greatly increased by the addition upon the outer garment of an indefinite number of flounces, folds, heavy over-skirts, and various other useless accessories.

But the evils and inconveniences above referred to are not the worst which result from the wearing of too great a weight of clothing as is customary among

fashionable people. The most serious consequences are those which are suffered by the delicate organs of the pelvis. The many heavy skirts and under-garments which are hung about the waist with no support from above, drag down the internal organs of the abdomen and cause them to press heavily upon the contents of the pelvis. After a time the slender ligaments which hold those organs in place give way, and various kinds of displacements and other derangements occur. The tightness with which the garments are drawn at the waist greatly increases the injury.

The custom of wearing the pantaloons buttoned tightly at the top, and sustained by the hips, produced so much disease even among the hardy soldiers of the Russian army, that a law was enacted making the wearing of suspenders compulsory. If strong men suffer thus, how much greater must be the injury to frail, delicate women! Here is found the source of "weak back," lumbago, pain in the side, and several other diseases of the trunk which affect so many thousands of American women.

Natural vs. Artificial Breathing.—Within the last fifteen years, we have had the opportunity of making many thousands of observations on the respiratory movements in women of all classes and several distinct races, civilized and uncivilized, recording our observations by means of an ingenious instrument known as the *pneumograph*. The result of our studies has been the demonstration of the fact, which we are glad to say is now recognized by many leading physiologists, that women whose respiratory organs have

not been deformed by tight lacing, breathe exactly as do men. The accompanying graphic illustrations of the breathing movements show the grounds for our conclusions. The first half of each tracing shows the movement of the upper part of the chest; the second half, that of the lower part of the chest. It will be noted that the tracings of all except the corset-wearing woman and the man in a corset, are practically identical, as are also those obtained from the man and woman in like conditions of corset compression.

Up to the present time, all standard authorities in physiology have been agreed that there are two distinct types of respiration in human beings, characteristic of the two sexes; namely, abdominal and costal, it being declared that adult males breathe chiefly with the lower portion of the chest, using the diaphragm and abdominal muscles freely, while women breathe chiefly with the upper part of the chest. In arriving at this conclusion, physiologists seem to have confined their studies of respiration in women wholly to civilized women, in whom the mode of dress is evidently well calculated to produce serious interference with the respiratory function. Many years ago (1879), referring to this alleged natural difference in the respiration of man and woman, the author wrote:—

“It is undoubtedly true that most women do breathe almost exclusively with the upper part of the chest; but whether this is a natural peculiarity, or an acquired, unnatural, and depraved one, is a question which we are decidedly inclined to answer in harmony with the latter supposition, basing our conclusion upon the following undeniable facts:—



Fig. 1. Man.



Fig. 2. Young Woman, in Corset.



Fig. 3. Man in Corset.



Fig. 4. Chinese Woman.



Fig. 5. Chippeway Indian Woman.



Fig. 6. A Scotch Woman who had never worn a Corset.



Fig. 7. A Reformed Corset-wearer.

PLATE O.—PNEUMOGRAPHIC TRACINGS OF NATURAL
AND UNNATURAL BREATHING.

1. "In childhood, and until about the age of puberty, respiration in the boy and the girl is exactly the same.

2. "Although there is a change in the mode of respiration in most females, usually soon after the period of puberty, marked by increased costal respiration and diminished abdominal or deep respiration, this change can be accounted for on other than physiological grounds.

3. "We believe the cause of this modification of respiration is the change in dress which is usually made about the time of puberty. The young girl is now becoming a woman, and must acquire the art of lacing, wearing corsets, 'stays,' and sundry other contrivances which will aid in producing a 'fine form.'

4. "We have met a number of ladies whose good fortune and good sense had delivered them from the distorting influence of corset-wearing and tight lacing, and have invariably observed that they are capable of as deep respiration as men, and practice it naturally.

5. "We are thoroughly convinced that this so-called physiological difference between man and woman is really a pathological rather than a physiological difference. In short, we believe that the only reason why women do not, under ordinary circumstances, breathe as do men, is simply that they cannot breathe naturally."

Since writing the above we have made many observations which confirm the views expressed. We long ago determined, however, to make a more exact study of the subject, should opportunity ever be afforded us to observe respiration in the women of

Indian tribes or other races who have not adopted the habits of civilization as regards dress.

The following brief description of some of the results of the studies above referred to, will enable the reader to appreciate the nature and value of the evidence thus obtained :—

Fig. 1 is a tracing obtained from a man of vigorous habits, when breathing without voluntary effort.

Fig. 2 shows the curves produced by a young woman wearing a corset. There is almost no movement of the lower part of the chest, although she evidently made an effort to use that part.

Fig. 3 is a tracing showing the respiratory movements of a man with a corset on. This tracing is exactly the reverse of that obtained from a man with ordinary clothing.

Fig. 4 is a fair average of the tracings obtained from the Chinese women.

Fig. 5 is a tracing obtained from a Chippeway Indian woman, who wore a loose dress, and had never had a corset on.

Fig. 6 is of interest in this connection, as it represents the respiratory movements of a civilized woman of Scotch birth, who, at the age of forty-five years (at the time this tracing was taken), had never in her life worn a corset or other means of constricting the waist, and had been wholly free from the pelvic disorders to which a large share of the members of her sex in civilized lands are subject.

Fig. 7 represents the breathing of a reformed corset-wearer, who had, by her change of dress, recovered from a condition of useless invalidism.

The lesson to be learned from these graphic representations of the breathing of women who have never acquired an artificial mode of respiration, as compared with the breathing of corset-choked women, is too obvious to require special emphasis. We only wish to add upon this point that our observations have been confirmed by other scientific investigators, and we believe we may confidently expect that the teaching of the next generation of text-books in physiology will be modified to agree with the plain teaching of nature upon this important question.

We beg our fair readers to consider for a moment the shape and structure of the chest, and the natural act of breathing. The upper part of the chest is completely inclosed by walls of bone and cartilage. The lower part of the chest is not thus confined, the lower ribs being connected to the breast-bone by long, flexible cartilages, so as to give them great latitude of movement. The chest may be compared, in its action, to a pair of bellows. The larynx is the nozzle, the upper chest the body, and the lower parts of the chest, the points of the ribs, the handles of the breathing bellows. Is it not apparent that to place a constriction about the waist, thus confining the lower part of the chest, is equivalent to tying together the handles of a pair of bellows, and then endeavoring to make use of them by vainly seeking to expand the body of the instrument? It is precisely in this awkward and inefficient fashion that the waist-constricted woman undertakes to breathe!

Abuse of the Feet.—Though we have not space here to elucidate fully the subject of the hygiene of

the feet, we cannot forbear calling attention to the very common evil practices which relate to them.

Narrow soles and small toes cramp the foot, and prevent it from supporting the weight of the body upon its whole under surface, as designed by nature. The high heel throws the weight forward upon the toes, which still further embarrasses them in their cramped condition, and greatly increases the injury arising from narrow toes and soles.

High, narrow heels do not afford sufficient support for the foot, and it is easily turned to one side, often resulting in serious sprains. The chief weight being thrown forward upon the fore part of the foot, it becomes weary, in walking, much sooner than it otherwise would. The narrow soles which usually accompany high and narrow heels, are likewise productive of injury, from not allowing the whole flat of the foot to sustain the weight of the body, as it should. Corns, bunions, and various distortions of the feet, are caused by wearing improperly fitting shoes or boots.

Fashion in Deformity. — The thoughtful reader, in view of the foregoing considerations, will be ready to ask, How did these depraving and injurious fashions first arise? While it may be impossible to answer this question in full, something of an explanation is found in the fact that fashions of a deforming character are common to almost every nation of the globe, barbarous as well as civilized, but particularly the former. It is very possible that the fancy for deforming the person by compression of the waist, may be a vestige



PLATE H. — FASHION IN DEFORMITY.

of the barbarous tendencies of the race when in an uncivilized state. With this thought in mind, it is interesting to study the customs of various nations with reference to artificial deformities. We have not space to pursue the subject further here, and shall be content with presenting on a plate a few representations of the customs of various nations, which will speak for themselves. (See Plate H.)

Healthful Clothing for Women.—“What shall we wear?” is a question we have often been asked by ladies who had patiently listened to a description of the evils of fashionable styles of dressing. We should certainly be very remiss in duty if we failed to point out a better way than that which we have condemned. If ladies could only be induced to ignore fashion altogether for a time, no difficulty would arise in the effort to conform to the order of nature.

In the first place, the corset and all its substitutes and subterfuges, tight belts, and every other device for compressing the waist or any other part of the body, can be at once discarded without the attention of any one's being drawn to the fact unless it be by the more elastic and graceful step, the brighter color of the face, and the general improvement in health in all respects. Suppose the waist does expand a little—or a good deal, even—beyond the standard seventeen inches; is it any disgrace? No, indeed. A woman ought to be proud of a large waist. A large waist indicates large lungs, and large vital organs, which, in turn, represent the probabilities of long life. A small waist indicates precisely the opposite. (Women must emancipate themselves from

fashion before they can accomplish anything in the direction of reform.

Why should woman—the gentler sex—be compelled to wear a strait-jacket, like a madman or a criminal, while man is allowed to go untrammelled by any such impediment? A strong popular sentiment in favor of large waists would soon do away with the foolish emulation to look frail and slender. If required, a suitable garment may be made, to support the bust, which will fit the form neatly without compressing any part. Several such garments and patterns for others are manufactured and sold by various parties in the large cities, east and west. See Plate K. Able physicians declare that compression of this part of the body, and the wearing of an undue amount of clothing, thus producing a local increase of temperature, is the cause of many of the peculiar diseases of woman, acting through reflex influence upon internal organs.

How to Dress Warmly.—The next important step should be to regulate the clothing properly. The whole body should be clad in soft flannel from neck to wrists and ankles nearly the year round. It is better to have the underclothing for the upper part of the body and that for the limbs combined in one garment. If arranged in two garments, they should only meet, and not overlap, as this gives too much additional heat over the abdominal organs and encourages waist compression.

A woman's limbs require as many thicknesses as a man's; and a garment which fits the limb closely will afford four times the protection given by a loose



FIG. 1. Copied from a fashion plate.



FIG. 2. A healthfully dressed woman.

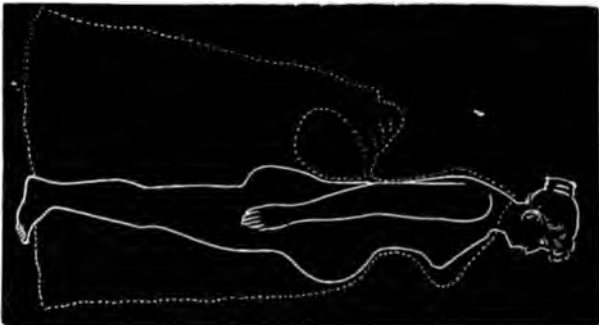


FIG. 3. An unnatural woman attempting to conceal defects.

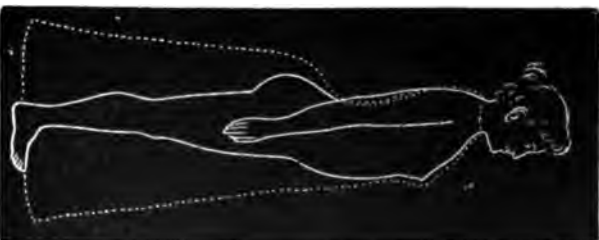


FIG. 4. A natural woman whose figure requires no appendages.

PLATE K.

skirt. Thick shoes or boots with high tops, and heavy woolen stockings which are drawn up outside the undergarments clothing the limbs, complete the provision for warmth. Leggins should be worn in cold weather.

All the undergarments, including the stockings, should be suspended from the shoulders by means of waists or suspenders. Waists are doubtless the better for the purpose. If several garments are to be suspended from the same waist, the rows of buttons to which they are attached should be arranged one above another, to avoid bringing several bindings together.

The two *most important* particulars having been secured,—freedom from compression and uniform temperature,—the outside dress may receive attention. It should be as simple as possible consistent with the mental comfort of the wearer. Gaudy colors and conspicuous ornaments betray poor taste and a vain, shallow mind. Many flounces, folds, and heavy overskirts are objectionable on account of their weight, to say nothing of the useless expenditure of time and money which they occasion.

The proper length of the skirt is a question of interest in this connection. How long shall it be? If physiology alone were asked the question, the answer would be that women do not need long skirts more than men, and that they are really an impediment to locomotion, and often very inconvenient. Custom says that women *must* wear skirts. Fashion says she must wear *long* skirts. Custom and fashion have prevailed so long that they have created an artificial modesty which seems to demand that woman's dress

must differ from man's by the addition of a skirt, at least, even if they are alike in all other particulars. This being the case, the best we can do is to modify the skirt so that it shall be as free from objections as possible. The great evils of long skirts are, unnecessary weight, the accumulation of moisture which is transferred to the feet and ankles, and sundry inconveniences to the wearer in passing over rough places, up and down stairs, etc.

The obvious remedy for these defects is to curtail the length of the dress. The train must be discarded at once as too absurd and uncleanly, with its filthy load of gleanings from the gutter, to be tolerated. Any further improvement, to be of practical utility, must shorten the skirt to the top of the ankle, at least.

A distinguished lady physician remarks as follows on this subject:—

“The externals of dress, though they involve a moral question, seem to me of far less consequence than the arrangement of the under-dress, for that involves health. As now generally worn, the under-dress is weakening the present generation of women; and, from the unvarying laws of nature, the effect must be transmitted to future generations. Mothers will confer upon their offspring a lower and lower vitality; and when we consider the already fearful mortality in infancy and childhood, there is little hope for the future, unless we can have some reform in this direction.”

Deformed Figures.—The average civilized woman is a deformed woman. Uncomplimentary as this statement may appear, it is nevertheless demon-



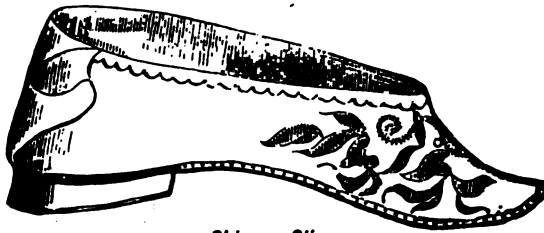
Grecian Dress.



Hawaiian Dress.



Chinese Foot.



Chinese Slipper.

PLATE J.

strably true. Neglect of physical exercise, and corset wearing, have produced such grave and almost universal physical deterioration among American women that scarcely one can be found who has reached the age of twenty years who is not more or less deformed. This idea was thoroughly impressed upon the writer's mind by personal study of the natural figure among Indian women of various tribes, including the primitive Yuma tribe of New Mexico and Arizona, Chinese women, and the peasant women of Italy, Germany, France, and England, and those very rare specimens of healthy and vigorous womanhood whom one meets in this country among the few who have dared to refuse to bow the knee to fashion, and have allowed themselves to grow up without any attempt to mould or fashion the body into a shape different from that designed for it by nature. Plates XVII to XXI show the contrast between a natural female figure and a figure which has been deformed by fashionable dress and neglect of physical exercise. Figs. 3 and 4 of Plate XXI, illustrate natural and unnatural breathing.

Uterine prolapsus, retroversions, retroflexions, and the various degrees of ovarian prolapse which accompany these displacements, are seldom met with among chaste unmarried women of savage or semi-civilized nations, but are very frequent among this class of young women in this country, and those of the wealthier classes of all civilized countries. In this country these conditions, when found in young women, are almost invariably attributed to some accident or imprudence in muscular exercise, such as jumping from a carriage, a fall upon the ice, jumping the rope, walking too great a

distance, lifting a pail of water, carrying a baby, or some similar circumstances. The baneful effects of stair-climbing have been lengthily dwelt upon by physicians as well as by over-careful mothers. Not infrequently such light exercise as running a sewing-machine, or standing behind a counter, or sitting upon a piano-stool, has been charged with producing the most dreadful forms of uterine displacement and other pelvic diseases. I do not say that none of the things referred to have ever been instrumental in bringing about uterine or pelvic diseases, but I have long been thoroughly convinced that such causes as are above mentioned are quite too trifling in character to be considered as anything more than proximate causes, back of which there lies an etiological factor of a general and fundamental character, the essential nature of which is deficient muscular development.

Climbing a flight of stairs a dozen or a hundred times a day would not injure in the slightest degree a young woman accustomed to mountain-climbing, or one of the Swiss damsels who, every day of their lives, descend and ascend the ladder road, which, for a good part of the year, is the only means of access to the little village of Albinen, Switzerland. Walking the floor with a ten-pound baby in her arms would be very light exercise for one of the swarthy women whom Stanley employed as porters to carry his heavy loads of supplies across the Dark Continent. A Dahomey Amazon would consider running a sewing-machine a ridiculous pastime, and would much prefer twirling the machine itself over her head or balancing it on her thumb. The female equestrian

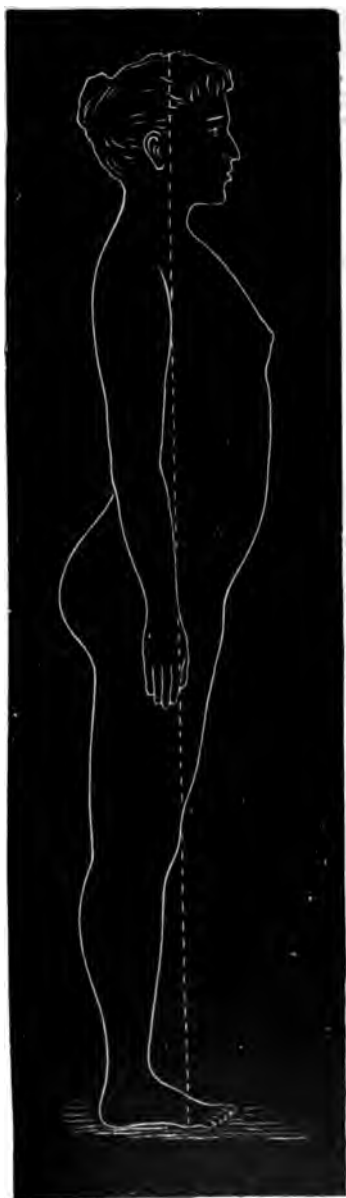


FIG. 1. Correct poise (a German peasant woman).

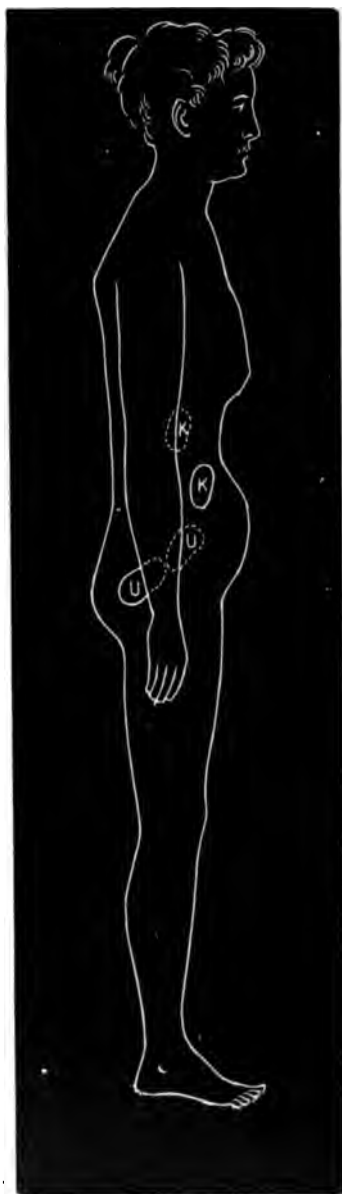


FIG. 2. Incorrect poise, results of corset-wearing.

PLATE XVII.—CORRECT AND INCORRECT STANDING POISE

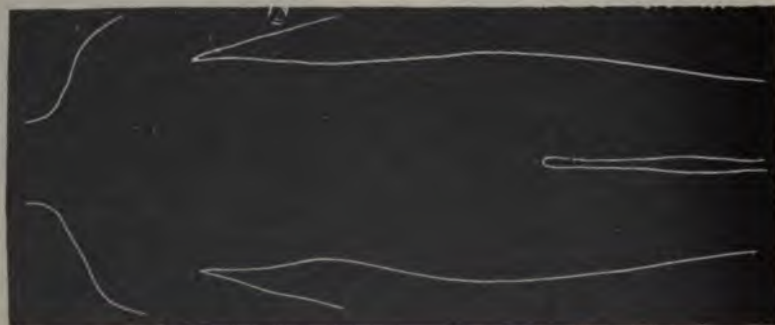


FIG. 1. Well-developed man.

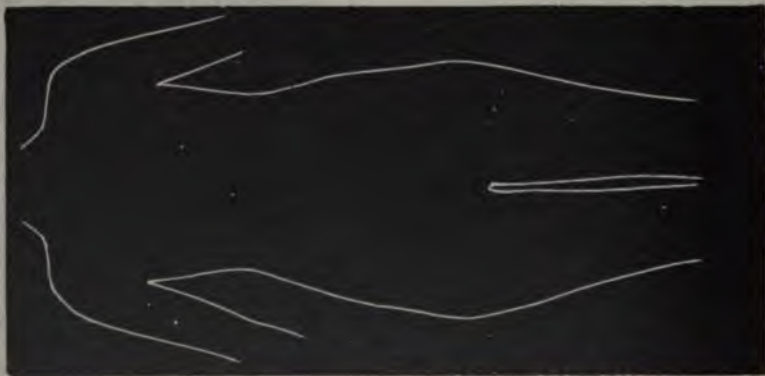


FIG. 2. Well-developed woman

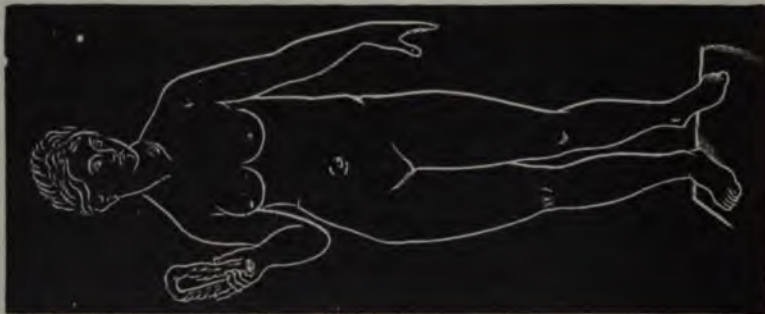


FIG. 3. Bronze Venus.

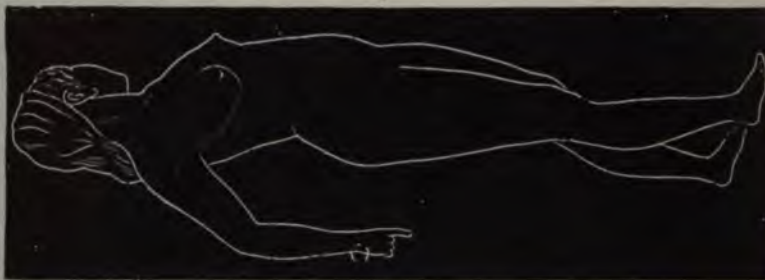


FIG. 4. Italian peasant girl.

PLATE XVIII.—NATURAL FIGURES.

who leaps from her horse to the ground and back again a half-dozen times in succession, with the animal flying about the ring at full speed, would smile at the absurdity of the proposition that any young woman could suffer serious injury by jumping from a carriage to the ground, or skipping a rope a few scores of times. It need not be denied, however, that these causes, trifling as they may appear, may be sufficient to provoke all the mischiefs with which they have been charged, in a young woman whose physical education has been neglected.

It is quite possible that the city-girl who has never been accustomed to more vigorous exercise than moving herself at a moderate rate along a level surface, should be harmfully overtaxed by the exercise of climbing two or three flights of stairs several times a day.

The remedy is not to be found in abolishing stairs and prohibiting young ladies every form of exercise which has been charged with producing pelvic mischief, but rather in subjecting young women to such a course of physical education as will fit them to endure muscular efforts of any reasonable character without injury.

—The mechanical injuries resulting from the wearing of garments which constrict the waist are conspicuously shown in the change in the figure which this mode of dress produces. I have had made a simple apparatus, by which it is possible to make an exact profile of the body in an upright position in any plane.

I have made with this apparatus a large number

of tracings for the purpose of studying the change in form induced by constriction of the waist, and lack of muscular development

From an artistic standpoint, the change in the contour of the body produced by corsets or tight bands certainly presents nothing attractive. But the deformity produced by the constriction of the waist has a significance of far greater importance than that which it presents from an artistic or æsthetic standpoint. Dr. Trastour, an eminent French physician, has clearly shown that what he terms the *statique abdominale* has an important relation to the health of the abdominal viscera. The relations of the several organs which occupy the abdominal and pelvic cavities are such that any considerable change in position necessarily results in disease. The stomach, dragged out of place, loses its natural tone, its walls become relaxed, dilatation results, and the patient suffers from all the distressing symptoms of gastric neurasthenia. The constant dragging upon the liver and the right kidney occasions the displacement of these organs, especially of the kidney. The prolapse of the organs which normally occupy the upper part of the abdominal cavity necessarily compels the displacement of the organs lying next beneath them, thus leading to prolapse of the intestines, or what is termed by Glenard and other French writers, *enteroptosis*. Prolapsed intestines become atonic through the disturbance of the portal circulation, and not infrequently pseudo-stricture of the large intestine is occasioned by its abnormally folding upon itself through the depression of its central portion, which is more

easily dragged down than the ascending or descending portion. Obstruction leads to fecal accumulation and dilatation.

Such disturbances of the relations of the viscera will be found in a large proportion of women suffering from pelvic disorders. Indeed, one may say, almost without reservation, that in a case in which there is disturbance of the normal relations of the pelvic organs, there will be found considerable disturbance of the relations of the abdominal viscera. In a woman who presents a prolapsed or retroverted uterus and ovaries there will almost invariably be found prolapsus of the bowels, in many cases a dilated or prolapsed stomach, and not infrequently a movable and prolapsed right kidney. In one hundred cases of pelvic diseases, taken without selection and in the order in which they came under observation, I have found disturbances of the normal relations of the abdominal viscera in ninety-four cases. The stomach and bowels were prolapsed in all of these cases. There was dilatation of the stomach in more than half the cases. The right kidney was distinctly movable, and fallen below its normal position in thirty cases. In twenty cases the kidney had fallen so much below its normal position that it could be freely moved about. In three cases both kidneys were prolapsed. In four cases the liver was very greatly prolapsed; and in three of the cases almost the entire organ was below the inferior border of the lower ribs. In one case the spleen, which was four times its normal size, enjoyed the freedom of the entire abdominal cavity. When first noticed, it was lying between the

uterus and the bladder, and was at first touch taken to be a fibroid growth connected with the uterus.

In the six cases in which there was no disturbance of the relative positions of the abdominal organs, the patients were unusually well developed muscularly, and the pelvic disease was distinctly traceable to other than mechanical causes.

The abnormal position of the kidneys and stomach present in a large proportion of cases of pelvic disease is undoubtedly responsible for a large share of the symptoms which are frequently termed reflex, and are supposed to be primarily due to abnormal pelvic conditions; whereas they are only a partial expression of the group of morbid conditions involving the entire contents of the abdomen and pelvis, of which the pelvic disorder is only a small part.

I have made a large number of measurements of civilized and uncivilized women for the purpose of determining the comparative relations of the waist measurements to the height and other proportions of the figure. The following is a partial summary of the results, the measurements being expressed in inches :

	Height.	Waist.	Percentage of waist to height.
American women,	61.64	24.44	39.6
English women (brickmakers, who wear heavy skirt),	60.4	25	41.8
French women,	61.6	28	45.4
Telugu women of India,	60.49	24.65	40.6
Chinese women,	57.85	26.27	45.4
Yuma women,	66.56	26.84	55.2
Civilized men — American,	67.96	29.46	48.3

The average of the measurements of 1100 young women between nineteen and twenty-one years of age, made by Dr. M. Anna Wood, of Wellesley College,



FIG. 1. Young woman in corset.



FIG. 2. Results of the corset.

PLATE XIX.—RESULTS OF TIGHT LACING.



FIG. 1.



FIG. 2.

PLATE XX.—RESULTS OF WEARING HEAVY SKIRTS.

were for height, 63 inches, for waist, 24.6 inches, making the percentage of waist to height 39, instead of 39.6. These figures are probably more nearly correct than my own measurements, as they represent the average of a much larger number.

A few words of explanation are necessary to present the full significance of the above figures. The civilized American corset-wearing woman has the smallest waist of any of the classes examined. The next in order is the Telugu woman, who suspends her scanty clothing by a cord tied tightly about the waist. Miss Dr. E. J. Cummings, of Ramapatam, India, who kindly made for me the measurements from which the above figures relating to Telugu women are deduced, tells me that it is customary with these women to draw the cord which suspends their clothing as tightly as possible; yet the amount of harm done thereby does not seem to equal the mischief accomplished by the American corset. The women brick-makers of England, who come next in the scale of waists, doubtless diminish the size of their waists and produce considerable distortion of their figures through wearing many heavy skirts suspended by bands drawn rather tightly about the waist. Civilized men, next in the scale, have a much larger waist than civilized women, yet do not equal in waist measure women who have had an opportunity to develop naturally.

French peasant girls, who are the principal recruits for the *maisons d'honte* of Paris, from their out-of-door life acquire fine figures, which, at least in the early years of their life in Paris, are not much re-

stricted by clothing, hence they have as good waists in proportion to their height as have Chinese women, whose loose garments afford ample room for natural development of the figure. But the Yuma Indian woman has a waist which seems almost disproportionately large, but which is doubtless the result of her active out-of-door life, free from other restraint than a little bark apron before and behind, and even this restriction is lacking before she has attained the age of fourteen or fifteen years, so that she enjoys absolute freedom from restrictions of any sort during the years when the civilized girl is already beginning the process of fashion torture which deforms her body and destroys its natural grace and beauty, and renders her the feeblest and most diseased of all human beings.

The measurements which I have made of savage men and women of the same tribe convince me that women naturally have larger waists, in proportion to their height, than do men. The liver and other viscera of the abdomen are larger in a woman, in proportion to height, than in a man, and hence require more room.

It will be noticed by referring to the table of waist measurements which we have given, that the waists of French women, Chinese women, and Yuma Indian women are larger in proportion to their height than the waist of the average civilized man, the proportions being 45.4 for French and Chinese women, and 55.2 for Yuma Indian women, as compared with 43.3 for civilized men. Careful measurements of an excellent model of the Venus de Medicis which I have in my

possession, shows the waist proportion to be 47.7 when compared with the height, the height being five feet seven inches, waist measure thirty-two inches. Certainly a great contrast with the modern woman. The following is a recently published comparison of the figure of the famous Mrs. Langtry, with that of Venus de Medicis :—

	Mrs. Langtry.	The Venus.
Height,	5 ft. 7 in.	5 ft. 7 in.
Across the shoulders,	15 inches	16½ inches
Bust,	36 "	38 "
Arms,	19 "	19 "
Thigh,	24 "	24 "
Calf,	13 "	13 "
Neck,	13 "	18½ "
Hips,	45 "	43 "
Length of leg,	38 "	38 "
Waist,	26 "	32 "
Length of arm,	26 "	28 "
Ankle,	8 "	9½ "
Foot,	8 "	
Face,	7 1-7 "	
Crown of the head,	24 "	
Nose to finger tip,	28 "	

It will be noted that in Mrs. Langtry, who probably fairly represents the modern civilized woman, the hips are broader, the shoulders narrower, and the neck smaller than in the Venus, although the height and many other proportions are identical. The most glaring difference, however, is in the measurement of the waist, which, in the case of Mrs. Langtry, is twenty-six inches, or 39.5 per cent of height, while that of Venus is 47.7 per cent. The waist measurement is not given in the comparative measurements of Mrs. Langtry and the Venus, a very judicious oversight, evidently intended to conceal from the fashionable aspirant for beauty of figure the fact that her small waist is a hideous deformity.

Personal Beauty.—Every woman desires to be beautiful; and there are few women indeed who do not yield to the instinct which leads her to adopt various little devices for the purpose of increasing, or making to appear to the best possible advantage, her natural attractions of mind or person. But the popular idea of beauty is in many respects faulty. A woman with a pretty face and a fine figure may be or may not be beautiful. Beauty is not simply “skin deep.” Its real elements are based upon mental and moral qualities rather than mere physical traits. A face cannot be really beautiful which hides behind it a character devoid of worth. A superficial observer may mistake a mere physical symmetry or comeliness for beauty; but an individual who is alive to the character of his surroundings and sufficiently awake mentally and morally to really know the significance of life, will through his intuitions quickly discriminate between a mere surface glitter and real beauty of soul or character. Physical beauty is the shadow after which so many seek, while character beauty is the real substance which is so often ignored. A beautiful character cannot be ugly in its external expressions, no matter how much Nature may seem to have neglected the principle of mutual fitness. The face is so thoroughly a mirror of the mind, simply a reflection of the character, that the real beauty or ugliness of the latter cannot fail to appear as plainly as the hand writing upon the wall in ancient time, and no prophet is required to interpret its meaning.

The way to cultivate real beauty, then, is to adorn the heart and mind with valuable and lovely traits,

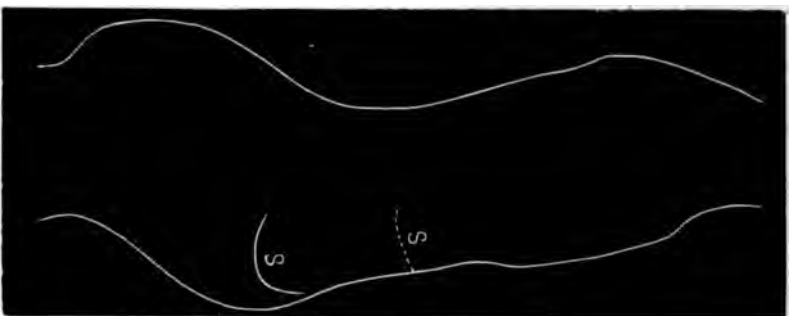


FIG. 1. Results of wearing a "health corset."



FIG. 2. Front profile.

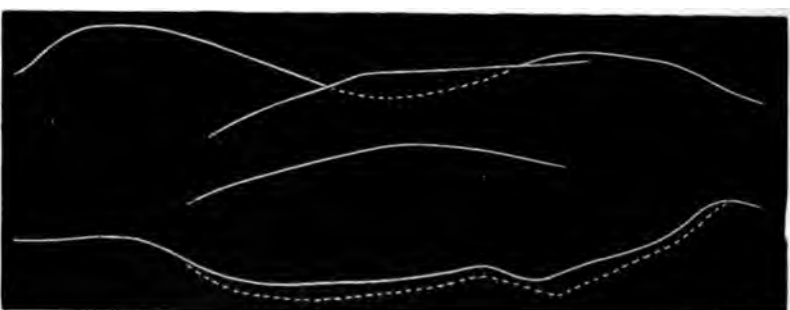


FIG. 3. Normal respiration.



FIG. 4. Clavicular respiration of a corset wearer.

and of all other mental and moral furnishing, nothing is so much to be desired as "the ornament of a meek and quiet spirit."

Without the cultivation of inward beauty, outward adornments and beautification are of little consequence; with such attainments only one thing more is needful, viz., physical health. Nothing contributes so much to the maintenance of a beautiful complexion, a sparkling eye, and grace of form and motion, as an active liver and sound digestion. Without these, it is useless to depend upon cosmetics. Their action is in the end harmful, as a rule, sometimes to a fatal degree. With physical health and vigor, and mental and moral worth, the individual whom Nature has apparently neglected, in dispensing her favors, will not be without attractions.

One of the most essential means of maintaining healthful beauty aside from scrupulous attention to diet, is the daily bath. A lady of fashion, in enumerating the means for preserving beauty, says: "Cleanliness, my last recipe (and which is applicable to all ages), is of most powerful efficacy. It maintains the limbs in their pliancy, the skin in its softness, the complexion in its luster, the eyes in their brightness, the teeth in their purity, and the constitution in its fairest vigor. To promote cleanliness, I can recommend nothing preferable to bathing. The frequent use of tepid baths is not more grateful to the sense than it is salutary to the health and to beauty. . . . By such means, the women of the East render their skins softer than that of the tenderest babe in this climate." "I strongly recommend to every lady to

make a bath as indispensable an article in her house as a looking-glass."

When the foul matters which ought to be eliminated by the skin and quickly removed from the body are allowed to remain unremoved, the skin becomes clogged and inactive, soon loses its natural luster and color, becoming dead, dark, and unattractive. When bathing is so much neglected, it is no marvel that paints, powders, lotions, and cosmetics of all sorts, are in such great demand. A daily bath, at the proper temperature, is the most agreeable and efficient of all cosmetics.

Bathing Protects against Colds.—It is an erroneous notion that bathing renders a person more liable to "take cold, by opening the pores." Colds are produced by disturbance of the circulation, not by opening or closure of the pores of the skin. Frequent bathing increases the activity of the circulation in the skin, so that a person is far less subject to chilliness and to taking cold. An individual who takes a daily bath has almost perfect immunity from colds, and is little susceptible to changes of temperature. Colds are sometimes taken after bathing, but this results from some neglect of the proper precautions necessary to prevent such an occurrence.

Neglecting to keep the skin active and vigorous by frequent ablutions is one of the most prolific causes of nearly all varieties of skin diseases, which are also too often aggravated by gross dietetic habits. The relation between the cutaneous function and that of the kidneys is so intimate that neglect of the kind mentioned, resulting as it must in obstruction of

function, is a very common cause of most dangerous disorders of the renal organs. Inactivity of the skin is also very commonly associated with dyspepsia, with rheumatism, gout, hysteria, and other nervous derangements. It is a not uncommon cause of bronchial and pulmonary affections. It is quite evident, then, that the proper and most efficient means of preventing these diseases is to maintain the functional vigor of the skin by the proper application of water.

A modern writer declares that in Spain the religious instincts of the people have become so perverted that it is considered sacrilege for a woman to bathe more than once in her life, which is upon the eve of her marriage. In more enlightened countries, it is to be hoped that the condition of the feminine cuticle is not quite so bad as that; but another writer, an Englishman, asserts that a large proportion of his countrymen "never submitted themselves to an entire personal ablution in their lives, and many an octogenarian has sunk into his grave with the accumulated dirt of eighty years upon his skin." American customs in this respect are not much better than the English; but it is gratifying to know that a very perceptible improvement is becoming evident in both countries. Our intercourse with Oriental nations and barbarians has taught us wholesome lessons in the care of the person. There is scarcely a savage tribe to be found in the deepest jungles of tropical Africa the members of which do not pay more attention to the preservation of a clean and healthy skin than the average American or Englishman.

All nature attests the importance of the bath. The rain is a natural shower bath in which all vegetation participates, and gains refreshment. Its invigorating influence is seen in the brighter appearance, more erect bearing, and fresher colors, of all plants after a gentle rain. The flowers manifest their gratitude by exhaling in greater abundance their fragrant odor. Dumb animals do not neglect their morning bath. Who has not seen the robin skimming along the surface of the lake or stream, dipping its wings in the cool waters, and laving its plumage with the crystal drops which its flapping pinions send glittering into the air? No child that has ever seen the elephant drink will forget how the huge beast improved the opportunity to treat himself to a shower bath, and perhaps the spectators as well, for he is very generous in his use of water.

If man's instincts were not rendered obtuse by the perverted habits of civilization, he would value the bath as highly and employ it as freely as his more humble fellow-creatures, whose instinctive impulses have remained more true to nature, because they have not possessed that degree of intelligence which would make it possible for them to become so grossly perverted as have the members of the human race. Man goes astray from nature, not because he is deficient in instinct, but because he stifles the promptings of his better nature for the purpose of gratifying his propensities.

A woman who has a perfectly healthy skin is nearly certain to be healthy in other respects. In no way can the health of the skin be preserved but by fre-

quent bathing. A daily or tri-weekly bath, accompanied by friction, will keep the skin clean, supple, and vigorous. There is no reason why the whole surface of the body should not be washed as well as the face and hands, and the notion that a common sponge bath is weakening is a popular error which has grown out of the fact that in the early days of the "cold-water cure," many persons injured themselves by cold bathing, and afterward went to the other extreme in the employment of the bath at too high a temperature. A bath at a temperature but a few degrees below that of the body may be taken daily without injury and with decided benefit. A little fine soap should be used once or twice a week to remove the oily secretion of the skin, which is always present in greater or less degree.

The following directions for treating a few of the most common maladies of the skin, especially those which affect the face and hands, we quote from our larger work on "Rational Medicine" in which the whole subject is more fully considered :—

Heat-Rash.—This is a form of eruption which often occurs during the intense heat of summer. It may consist of simply a diffused redness of the parts exposed to the direct action of the sun's rays, usually termed sunburn, or of an eruption of minute, red pimples known as "prickly heat" eruption, or "heat eruption," which is accompanied by severe prickling and itching. Sunburn, when severe, is followed by peeling off of the epidermis. Prickly heat generally disappears within a few hours, but may continue some time, and become a real eczema.

Treatment: For sunburn, cool the affected parts with tepid compresses, and anoint well with vaseline. Persons subject to prickly heat should wear silk or cotton next the surface, and should avoid overheating themselves by overexertion during hot weather. Irritation of the eruption may be relieved by cool baths or cool sponging, bathing the surface with soda or saleratus water, a teaspoonful to the pint. After bathing, the surface should be dried by a gentle patting with a fluffy towel and without rubbing.

Erythema or Redness of the Skin.—This is a disease of the skin characterized by redness, due to active congestion or inflammation. It may occur as a simple diffused redness, produced by cold, friction from wearing flannel clothes, the rubbing together of two folds of skin, etc. It also accompanies various other diseases of the skin. Sometimes, in addition to the diffused redness, an eruption of small red pimples occurs on the face or hands. The digestion is often disturbed, and the patient feels slightly feverish. The duration of the disease being usually very short, little treatment is required.

Treatment: The diet should be very light and unstimulating. A warm bath should be taken daily, and the affected parts should be covered with a thin cloth moistened with tepid water, or with a solution of saleratus, a teaspoonful to a pint of water. The use three or four times a day of a lotion consisting of equal parts of glycerine and soft water is also of great service.

Acne—Face Pimples.—This is a very common affection, especially between the ages of fifteen and

thirty years. The seat of the disease is the sebaceous follicles or oil-glands of the skin. The eruption consists in pimples scattered over the face, neck, back, and chest. The inflammation of each follicle may run its course in three or four days, or may continue for a week or ten days. When the inflamed part becomes indurated, or even hardened, the inflammation may continue for several weeks. Several varieties of the disease are observed; that just described is the most common. Another form consists in obstruction of the outlets of the sebaceous glands, producing what are sometimes termed flesh-worms, or grubs. This form of acne is indicated by little black specks, seen upon different parts of the face, but chiefly upon the skin of the nose. Each speck marks an obstructed outlet; and if pressure is made on either side, something having the appearance of a small grub may be pressed out. Upon careful examination, this so-called grub proves to be a mass of hardened sebaceous matter, or sebum, which has assumed its grub-like form by being pressed through the small mouth of the follicle. The black speck, giving to this little cylinder of fat the appearance of a head, is simply a small accumulation of dirt. The technical term for one of these little masses is *comedo*. When examined under a microscope, these are often found to contain a whole family of parasites, male, female, and their numerous progeny. It is not probable that this parasite gives rise to the disease, but rather that the distended follicle furnishes an agreeable home for the insect, which is closely related to the *acarus scabiei*, or itch mite. In another form of

acne, in which the nose and the adjoining portion of the cheek are chiefly involved, in addition to the pimples described there is intense congestion and redness of the parts, due to enlargement of the blood-vessels, which are sometimes so much distended as to be distinctly visible. This form of the disease is termed *acne rosacea*.

The chief causes of acne are erroneous dietetic habits. People suffering with acne can bring on an acute attack at any time by the use of rich pastry, fried food, and large amounts of sugar or sweet food, etc. Doughnuts, griddle cakes, cheese, hot bread, preserves, candies, and similar dietetic abominations, are very active causes of different forms of this affection. *Acne rosacea* is very frequently the result of using alcoholic liquors in some form, on which account it is sometimes termed, when seen in persons addicted to drinking, the "rum-blossom." Acne is sometimes the result of debilitating habits, particularly secret vice in young persons, though it should be by no means supposed that every young person affected with this disease is addicted to secret vice.

Oily Skin.—In some persons there is an excessive production of sebaceous matter or sebum, due to morbid activity of the fatty glands of the skin. The skin of such persons presents a shiny look. Little beads of oily matter may be seen at the mouths of the glands near the roots of the hairs. The forehead, nose, and cheeks are most frequently affected. When the scalp is affected, the condition may be indicated by soiling of the pillow. Acne is frequently accompanied by this condition.

Treatment: The only treatment to be employed is the frequent application of soap. When many of the glands are clogged up, as indicated by the abundance of grubs, the surface should first be thoroughly rubbed with warm oil. Cocoanut or almond oil is the best. After half an hour the surface should be rubbed with a flannel cloth, thoroughly saturated with soap, moistened with warm water, and stretched over the fingers; or a soft sponge may be used. This is best done at night, just before retiring. When the secretion of fat is very profuse, the operation may be repeated two or three times a day.

Dry Skin.—A condition of deficient secretion of fat is very frequently met with in cases of dyspepsia and in persons suffering with other wasting diseases. The best remedy is the daily application of the olive oil or vaseline.

Dandruff, or Dandriff.—This is a condition in which branny scales are shed from the scalp in great abundance. It may be due to eczema or pityriasis, as already remarked, or may result from a disorder of the sebaceous glands, and from acne. The last is the most common cause of the disease. In this form of the affection, the abnormal secretion of the fat glands appears upon the scalp as yellowish scales. This condition is akin to that described under the head of oily skin, being, in fact, a dry form of the same disease. This condition is sometimes present upon the nose and cheeks as well as the scalp. It is often a very annoying complaint. When affecting the scalp, it sooner or later results in loss of the hair. This is not because the dandruff destroys the hair,

but because the same disease which causes the dandruff interferes with the nutrition of the hair, thus occasioning its loss. On account of its tendency to produce baldness, the disease should never be neglected. Dandruff is generally occasioned by disorder of the digestion, or some other debilitating disease.

Treatment: Restore the general health by proper attention to the digestion and general hygiene. For dandruff of the face, apply the same remedies recommended for oily skin. The scalp should also be treated in the same way, by gentle shampooing with ordinary washing soap once or twice a week. A very soft brush should be used. Neither a stiff brush nor a fine comb should ever be used for removing dandruff. After shampooing, a liniment composed of equal parts of castor-oil and alcohol may be rubbed on the scalp, or an ointment composed of a drachm of tannin to an ounce of vaseline.

Offensive Perspiration.—This is a condition which is sometimes exceedingly annoying. It is occasioned by the excretion in the sweat of elements of an offensive character. Odors of various kinds are produced. Rheumatic persons are generally most disagreeably affected. The arm-pits are the portions of the body most frequently affected, the offensive odor arising from the feet being due to decomposition of the sweat, and not to the abnormal character of the secretion. This condition is sometimes very difficult to overcome. The best remedy is thorough cleansing of the parts, at least twice a day, with soap and water, or some disinfectant lotion, as permanganate of potash, a solution of chlorinated soda, or of two or three per cent of

carbolic acid. Washing the affected part with a solution of chloral, a drachm to the ounce, is a recently recommended remedy. What is known as *Bromidrosis* is a condition in which the perspiration imparts to the clothing some peculiar color.

Freckles—Lentigo.—These consist in an increase of the pigment or coloring matter of the skin in small spots. They most often occur in persons who have delicate skins, being greatly increased by exposure to sun and wind, though not produced by them, as is tan. They do not necessarily indicate an inactive state of the liver. Quite an eminent authority on lung disease declares that freckles indicate a predisposition to consumption.

Treatment: Very difficult of removal, and impossible if patient continues exposure. It is better to have the freckles however than to forego the valuable influence of the sunshine and fresh air. The advertised lotions and cosmetics are either dangerous or useless. The following are a few of the best-known remedies for the removal of freckles and tan:—

1. Three tablespoonfuls of fresh scraped horse-radish; buttermilk, a pint. Allow to soak six or eight hours, shaking occasionally. Cider vinegar is sometimes used in place of the horse-radish. Apply to the face at night, leaving on till morning.

2. Two tablespoonfuls of lemon juice; an equal quantity of water; a tablespoonful of glycerine; a heaping teaspoonful of powdered borax. Apply three or four times a day, drying after fifteen or twenty minutes with a fluffy towel.

Moth Patches—Liver Spots—Chloasma.—The brownish spots of irregular shape and size often seen upon the face, and popularly known as “liver spots,” are similar to freckles, but larger in size. They often accompany disease of the liver, and are not infrequently present in diseases of the womb, which may be due to the fact now well understood that disease of the liver is a common cause of disease of the womb.

Treatment: Little or nothing can be done for these blemishes except to improve the general condition as much as possible.

Baldness.—There are two varieties of baldness, the ordinary form, and what is known as “patchy baldness,” a form in which the hair is lost only in circumscribed spots. The loss of hair usually begins first at the temples, the forehead, or the crown, gradually extending. It is very common in old age, being the result of the general decline in nutrition which occurs in advanced life. When it occurs in early or middle life, it most commonly results from the disease of the scalp known as dandruff. Baldness also results from eczema and from ringworm and favus. Temporary baldness not infrequently follows erysipelatous, typhoid, and other fevers. Baldness may be occasioned by anything which deteriorates the general health. Excessive brain labor, resulting in congestion of the head and too much heat in the scalp, may produce it. It may be the result of dyspepsia, of excesses of various kinds, and of any debilitating disease. Men suffer more than women, which is probably due to the fact that women do not so habitually

overheat the head by the constant wearing of warm head coverings. In some cases, the disease is hereditary.

Treatment: Prevention is the best remedy, as many cases are incurable. The scalp should never be overheated. Head coverings should be light, and should allow free access of air to the head at all times. The hair should not be harshly brushed with a stiff brush, and should never be combed with a fine, sharp-toothed comb. This is particularly true if dandruff is present, as the measures referred to will certainly aggravate the difficulty. When the hair is very dry, a little fine unguent of some kind may be employed; but the common practice of "greasing" the hair is a bad one. Such harsh mixtures as are often employed by barbers in shampooing are very harmful to the hair. Soap should be rarely used unless of the finest quality, but the head should be kept clean by frequent washing with warm water, shampooing with the white of egg, followed by thorough rinsing.

When the scalp is smooth and shiny, especially in cases of "patchy baldness," which is due to nervous disease of the scalp, little can be expected from treatment. If a large number of hairs are still present, however, even though they are very short and thin, something may be done. The case is much more hopeful in young than in old persons. When hereditary, little can be expected from treatment. First attention should be given to the general health. The various stimulating lotions which are advertised for this purpose should be carefully avoided, as they will

be rarely successful, and may do much harm. No amount of stimulation of the scalp will effect more than temporary benefit unless the general nutritive forces of the patient are also improved by attention to hygiene.

It is rarely necessary to cut the hair close, and shaving the scalp is quite unnecessary. If the scalp is dry, a little fine oil should be rubbed upon it daily with much gentle friction. If dandruff is present, treat as directed on page 286. If the case is obstinate, consult a physician.

Hirsutes—Overgrowth of the Hair.—This morbid condition consists in an abnormal development of the fine short hairs. It is most troublesome in ladies, in whom the hair of the upper lip is sometimes sufficiently developed to form a mustache. We recently met a case in which a full silken beard had grown.

Treatment: The so-called *depilatories* sold for the relief of this condition are worthless. They do nothing more than to remove the external portion of the hair, only penetrating a short distance into the hair follicle, and hence the hairs soon grow again. Being usually composed chiefly of lime, considerable irritation is not infrequently produced, and sometimes quite severe disease of the skin. Pulling out the hairs is only temporary in its effects, although more lasting than the action of depilatories. The only cure is destruction of the hair or its follicle. This may be generally accomplished by passing into the follicle a fine glover's needle and twisting it about in such a way as to excite sufficient inflammation to obliterate or close it. Sometimes a heated needle is used for

the purpose. The best plan of all is to pass a current of electricity through the needle after it has been inserted into the follicle. Galvanic electricity is necessary for this purpose. This method of treatment is the most satisfactory of all. We have employed it in a number of cases with entire success and do not rely on any other method as entirely efficient.

MARRIAGE.

The scope of this work does not permit us to consider this subject at any length in other than its physical relations. Considered from the stand-point of health alone, marriage under favorable circumstances is conducive to the longevity of the individual as well as necessary to the perpetuation of the race. Statistics show that married persons, whether male or female, live longer on the average than unmarried persons. There are various influences which may contribute to cause this difference other than those which arise directly from the matrimonial state; but after making fair allowance for these, it is probably true that the influence of marriage is to prolong life when the privileges which it allows are not abused. Marriage as an institution is as old as the human race. As a natural rite, traces of the institution exist among the lowest and most degraded tribes of the human race, and also to some extent among certain classes of the lower animals. At different ages of the world and among different classes of people, marriage has been regarded in very different ways. At some periods and among some races, it has been looked upon

as of trifling import,—a state which might be entered upon and withdrawn from at pleasure, by either party, though usually the husband has considered it his right to rule in the matter, making or dissolving the marriage bond at will. Among all Christian nations, however, the rite of marriage has ever been looked upon as most sacred in character, binding alike upon both husband and wife, and not to be dissolved without cause of the gravest character. Unfortunately, the notion of marriage which prevails among savage and barbarous people at the present time, which regards the institution as simply a convenient arrangement or formal contract, seems to have fastened itself to a very considerable extent upon the minds of certain classes even in the civilized communities of the present day. The records of our courts and the columns of the daily newspaper afford abundant evidence of this fact. This disregard of the sanctity of marriage and contempt for its restrictions is one of the most alarming tendencies of the present age. It is no uncommon spectacle to see men and women of good standing in society appear in court in a suit for divorce without in the slightest degree affecting their standing with their society friends, or in any way disturbing their social position. Doubtless much of this loss of regard for the marriage institution and the desire to escape from its bonds arises from evils which have their foundation in a want of mutual adaptation in the wedded parties. Undoubtedly the great haste to enter the matrimonial state manifested by the young people of the present day and the wholly artificial conditions under which ac-

quaintanceships leading to marriage are formed and carried on, tend strongly to detract from the sanctity with which the institution should be regarded.

In view of these facts it is important to consider some of the factors which go to make up a healthful and happy matrimonial union.

The Object of Marriage.—Physiology recognizes one object for the institution of marriage, namely, the preservation of the species. This is undoubtedly its primary object, although there are other ends to be attained by marriage which add to its importance and dignity as a divinely established institution. A genuine woman looks forward to the possibilities of motherhood with glad anticipations,—the sexual privileges of the married relation are not the attractions which lead her to desire to enter upon it; but it is not to be supposed that motives of so high and chaste a character are always the actuating ones. The passion denominated love might often be more properly termed lust. The opportunity for the gratification of the animal passions is no part of the function of marriage. The instincts of the animal nature were never intended by the Creator to become dominant in their influence, but simply subservient to the accomplishment of the great ends for which the institution of marriage was created.

When to Marry.—This question is a purely physiological one. At any rate, the physiological aspect of the question is the leading one and the dictum of physiology must be allowed to settle the question whenever any conflict of opinions may arise. The voice of physiological science on this

question is a clear and decisive one. She speaks in terms which cannot be mistaken. According to her ruling, the earliest period at which marriage can occur physiologically is that at which the body completes its development, which is not before twenty to twenty-two in the female, and twenty-four to twenty-six in the male. The girl may attain her full growth in height two or three years before this time, but growth in stature is not the whole of development. The developmental process is one which involves every organ in the body. It includes the broadening and deepening of the chest and the expansion of the pelvis; the development of rudimentary nerve-cells and fibres, the hardening or ossification of the bones, and numerous other details of development too numerous to mention. Some of these, particularly those which relate to the complete development of the brain and nervous system, are not fully accomplished until some years later than the ages above mentioned.

Marriage involves the probability of offspring; and for a woman to enter the marriage state and take upon herself the responsibility of bringing into the world new beings before she has herself attained complete physical development, is nothing more nor less than a physical crime. The mother transmits to her offspring her own characteristics. If the mother is immature and imperfectly developed, her child will have impressed upon it the stamp of her immaturity and will come into the world with a defective organization destined never to attain mature development. Who has not met time and again the progeny of these

girl-mothers grown old in years but as childish in intellect as though they were yet in their teens? Such children are destined to a short and inefficient life. No experienced stock-raiser ever allows his animals to breed until they have attained their full maturity, knowing well that the offspring of young mothers are not such as to be desired, and that they will be weak and of feeble constitution, and will not reach the high order of excellence which he wishes to maintain.

It is a notable fact that among nations who are degenerating and whose national characteristics present the marks of race deterioration in operation for many centuries, marriages occur at a very early age. For instance, we are informed by travelers in Japan that maidenhood is a period of life not known in that country. As soon as the period of puberty is reached, the girl becomes a married woman and assumes the duties of a wife and mother. The same is true of nearly all other Eastern countries, in the Sandwich Islands, in the interior of Africa, and even in some more civilized countries, as in Italy, and to a considerable extent in Spain. In all of these countries physical, mental, and moral degeneracy is apparent in a very marked degree, and who can doubt that early marriage is one of the most prolific causes? The ancient Grecian philosopher, Plato, fixed the ages of marriage at twenty for the female and thirty for the male. In modern Greece as well as in Oriental countries the ages at which marriage usually occurs are much earlier than this. The result of following the wholesome advice of Plato was the production of

a nation which led the world in culture, enlightenment, and literary prowess; but the Greeks of the present day can boast of neither mental nor physical preëminence.

There are other reasons besides those of a purely physiological character which forbid the entrance of the marriage state before the ages mentioned. Before this time, the judgment is not sufficiently mature to enable a young woman to make a fit selection of a partner for life. Her own character is not thoroughly formed; her tastes are not yet fully developed. The person who may answer to her ideal husband at sixteen might appear in a very different light after a few more years' experience with the world. The selection of a life partner is one of the most momentous questions which a human being is ever called upon to settle; and it is certainly highly improper that such a question should be settled once for all while the character is undeveloped and the judgment immature.

Again, until the age of twenty to twenty-two or twenty-three years the vital forces are wholly required for the proper maturing of the structures of the body and the development of the mind. A young woman of sixteen or eighteen is totally unprepared to enter upon the grave responsibilities of wifehood or motherhood. How many great statesmen, philosophers, or authors have been born of girl-mothers? The great men of the world have had, almost without exception, mothers whose youth was occupied in fitting themselves mentally and physically for the grave duties of later years. The girl who marries at

sixteen and settles down to the routine of domestic duties, as must be the case in the majority of instances, has little further opportunity for storing the mind with useful knowledge, cultivating the intellect, and preparing herself to discharge her duty to society in such a way as to leave a lasting impression upon it. The women of influence, those who are the shining lights of society, are those who have not been in too great haste to assume responsibilities for which they were not prepared and of which they knew nothing. They have been women who devoted the early years of womanhood and maidenhood to the acquisition of knowledge and the formation of refined tastes, to the cultivation of mind and morals, and the formation of habits of industry and usefulness. Such women have found plenty to occupy their time until they had attained to full maturity without devoting any portion of it in setting traps for husbands. The other day we heard of a woman boasting to her daughter of sixteen, that she was engaged eighteen times before she was as many years of age. It was not at all surprising that the daughter of such a mother should marry a boy as childish as herself and but a little older.

A girl who marries at fifteen or sixteen years of age, never attains to full development of either mind or body. The duties of wifedom and maternity make demands upon her vitality which she is not prepared to support, and consequently her development is dwarfed in every way. Females suffer more than males in consequence of early marriage, as in addition to other exhausting demands, they have imposed upon them the burden of childbearing. It is an appalling

thought that these weak and immature mothers will not only transmit to their children their own deficiencies of development, but through their children the same defects of constitution and character will be transmitted to the next generation, and thus the evil be perpetuated, the offspring of each generation growing weaker and weaker, and becoming more and more liable to disease, and showing greater constitutional defects, until the line becomes extinct, unless the degenerating process is checked by some intervening influence of a redeeming character.

Young Wives and Old Husbands.—Occasionally, far too frequently in fact, the good sense of society is shocked by a matrimonial union between a blooming young girl and some infirm octogenarian whose only charm is the possession of a large fortune. It is hardly conceivable that a young girl could be actuated by other than sordid motives in allowing herself to make an alliance of this character. It is wholly unnatural that young women should love and desire to marry men bordering on decrepitude if not actually infirm with age. Too often these unions are the result of coercion on the part of the parents, who are willing to sacrifice the feelings of their daughter and her life happiness for the purpose of making what they consider an advantageous family alliance. Such a course on the part of parents is in the highest degree criminal, and the daughter who is the victim of such monstrous cruelty is deserving of sympathy and commiseration. Her life is destined to be a desolate one. Many a young woman marrying under such circumstances has in the desperation of her unhappi-

ness sacrificed character, home, and friends rather than endure the galling bondage of such an ill-assorted marriage.

The children of such a marriage, if it is a fruitful one, are cursed by the results, as well as the parents. The old, unhappy faces of such little ones are really sad to look upon. They are certain to die early, and their premature death is, in most cases, a happy event, both for themselves and the world. Many times scrofula and consumption make their existence a curse to themselves and a burden to others, so that death comes as a grateful release.

Another feature of this sort of marriages is the fact that the husband has, in the majority of instances, been married before, perhaps more than once, and very likely has grown-up children who still need the care of a mother. No young woman, with an ordinary amount of common sense and foresight, would venture into such a home to preside over it as its mistress without the most serious foreboding. Step-mothers, especially if young, have a hard lot. They seldom receive sympathy either from their husbands or their friends. The husband is very certain to sympathize with the children, and if the friends do not take sides with the children in their real or imaginary troubles, the mother does not receive their sympathy, the general feeling being that she knew what was before her, and ought to have known better than to place herself under such circumstances.

As a rule, the husband should be one or two years older than the wife, but the difference should not exceed eight or ten years in favor of the husband. Too

great a difference in age makes the husband and wife too unlike in tastes and in character. A woman should avoid marrying a man younger than herself. As a rule, a young woman is more mature than a man of the same age, and for a woman to marry a man younger than herself is to prepare her for domestic unhappiness in the lack of the husband's power to command proper respect from his wife on account of his own inferiority in years and development.

Whom to Marry.—We have already given several hints respecting the selection of a husband, but a few more words on the same subject will be admissible. We do not propose to give exact rules on this point, knowing very well that such rules will not be followed if laid down, as marriage is not a thing to be governed strictly by law, although it is a matter in which, above all others, calmness, consideration, and deliberation should be exercised. "Love at first sight" is seldom the kind of love which will bear the test of years of association and the trials and perplexities of married life, together with its disappointments and hardships, which frequently come through the reverses of fortune. Genuine love is that which is based upon a real adaptation of individuals to each other, and must be the outgrowth of real acquaintance with the character, tastes, habits, and all that goes to make up the sum of personal traits and characteristics. Love based on any less thorough foundation than this, can scarcely be called genuine, and is not likely to last. We have known cases in which marriages resulting from "love at first sight" were apparently mutually happy; but these are certainly excep-

tions to the rule. What is mistaken for love in these cases is simply fancy. A young lady meets a young gentleman at a party, or has an introduction to him under some other circumstances in which he is appearing at his best. She sees only one side of him, and that only a very small side. She may be favorably impressed with his general appearance or with some particular feature, such as impressive eyes or a good form, or she may be fascinated, through love of dress, by a fashionable suit of clothes, an ivory-headed cane, a richly set ring, or some other showy ornament. Any of these fancies may be mistaken for love, but they are wholly different from the genuine article. True love is a sentiment excited only by responsive sympathies from a kindred soul. Love which is centered only on externals is as superficial a feeling as that on which it is fixed. The only element in manhood or womanhood worthy of love is the character. This does not depend upon externals, although there is undoubtedly a close harmony between the external and internal characteristics of the individual.

Let us consider, then, some of the points to which a young woman should give attention in selecting from among those who may bestow attentions upon her, the one who will be the most likely to make her a good husband.

1. The individual must be of the proper age. A suitor her inferior in years or one many years her senior should be at once discarded for reasons already given. Such persons sometimes make good husbands, but the circumstances are very rare which can make

a violation of this rule a safe course to follow or one likely to result in happiness. The usual result is unhappiness and the nearest approach to purgatory on earth.

2. He should be the possessor of good health and a good constitution. Some sentimental mothers will exclaim against such a restriction as this, but we insist that this is a matter of too great importance to be ignored. A young man who has not good health cannot make a good husband in the fullest sense, as feebleness of constitution will render him liable to become unable to contribute to the support of the family, and the wife, enfeebled by the duties of maternity and the double burdens of caring and providing for her household, may find herself placed in the most unhappy and embarrassing circumstances.

Again, a husband who is not in the enjoyment of good health is not prepared to transmit a good constitution to his children. Although the mother may herself be healthy, she may have imposed upon her the task of rearing children blighted with disease from the very moment of conception, and destined to live short and suffering lives, a constant source of anxiety to their parents and of misery to themselves.

Before entering upon such a union, a young woman should also take into consideration the fact which has been mentioned in the physiology of reproduction, namely, that in some mysterious manner the constitution of the wife is modified by that of the husband, probably through the influence of the child during pregnancy, so that her own health may suffer to a greater or less degree as well as that of the child.

She should also recollect that the impression thus made on the constitution is ineffaceable, so that though the feeble husband should die and a subsequent marriage be with a healthy man, the resulting offspring might still be affected by the feebleness of the former husband.

It is obvious that a man suffering with any contagious disease is wholly unfit to enter the marriage state. A young woman should take pains to ascertain whether or not the young man who offers his hand in marriage is free from any possible taint of any of the diseases which result from immorality. We have often met cases in which we have found women suffering in the most painful manner from diseases which were the direct result of contagion from husbands who had before marriage contracted some form of venereal disease.

Dr. Noegerath of New York City, some years ago read a paper before the American Gynæcological Society, in which he called attention to the fact that a latent or apparently cured gonorrhœa contracted many years before might excite the most serious and intractable forms of uterine and ovarian disease in a woman who had before marriage been free from any form of sexual disorder. The paper referred to cited many cases in illustration of the position taken, and since our attention was called to the matter, we have observed quite a large number of cases in which the existing disease could be traced to no other cause, and could be fairly attributed to this.

The only safe rule for a woman to follow in this matter is to refuse to marry any man who has suffered

from any form of venereal disease. This rule we would make imperative. We grant that there are cases in which this restriction may seem a severe one, but so long as men understand that they can violate every law of purity and decency without prejudicing their chances for a satisfactory marriage, masculine purity, and consequently feminine purity also, lacks one of the strongest safe-guards which may be thrown around it. Hence, we advise every young woman before marrying any young man concerning whose past history she has any suspicion whatever, or is in the dark, to make careful inquiry from those who have had opportunity to know, and if she cannot obtain the desired information elsewhere, to seek it from the young man himself.

A young man whose family is known to be consumptive, and who himself possesses tendencies in the same direction, should not be considered a fit husband for any young woman, nor indeed for any one. We have known cases in which young women have so utterly ignored this fact as to marry men who were already in the advanced stages of the disease. In one case which came under our immediate notice, the man being a patient under our care for a short time, the husband, a recent graduate, died in a few weeks after the marriage, of pulmonary tuberculosis, after suffering from the disease for several months, it being well advanced at the time of his marriage. It is a weak sentimentality which leads a young woman to think it her duty to marry a young man in order to be his nurse. A man who really needs a nurse can employ one as easily as he can support a wife, and

can doubtless secure more skillful services than a wife could possibly render.

Hereditary tendency to insanity should also be sufficient to render a young man, otherwise in every respect unobjectionable, ineligible to marriage.

Epilepsy is another disease so evidently hereditary in character and so closely allied to mental disease that the son of an epileptic father or mother should be regarded as likely to make a very undesirable husband, since the disease might at any time make its appearance though it may have been quiescent until the time of marriage, and it is likely to appear in the children even if the father should happen to escape. A person suffering with epilepsy or any other form of nervous disease should of course be considered unfit to enter the marriage state. Epileptics are as a rule defective mentally and often morally. The observation has been made that a much larger proportion of epileptics is found in the criminal classes than among other classes of society.

A year or two ago we took part in a discussion at a meeting of a medical association at which a paper had been presented by a professor of genito-urinary diseases in men. In considering the question whether syphilitics should marry, the professor had taken the position in his paper that a person who had suffered a severe attack of syphilis should delay marriage for two or three years, after which time he considered marriage perfectly admissible. We of course took issue with the professor on this point, since he had considered only the question of contagion, and had wholly ignored the fact that a man who has suffered

with syphilitic disease, though he may have recovered from the active symptoms of the malady to such a degree that he is not liable to communicate it directly to another person, is pretty certain to transmit the results of the horrible disorder to his children, in whom they will appear, if not in the most active form of the disease, as is often the case, in the form of scrofula, consumption, rickets, and other constitutional disorders. We would insist with the greatest emphasis that *a syphilitic individual should never marry*. While it is possible that this hereditary disease may be eradicated by a long course of training and abstemiousness, it is never possible to say with any degree of certainty that the disease is cured, and the common method of treating this malady is such that while the active symptoms are repressed, the seeds of the disease are left in the system to make their appearance later on in life or in the next generation.

Congenital defects, as hare-lip, congenital deafness or blindness, and deformities of various kinds, should be considered an objection to marriage as these deformities are likely to appear in the children. This is not an invariable rule, but it is true in a sufficient number of cases to render it undesirable that a person possessing them should take any part in the production of the race, for whom it were better that such individuals should contribute nothing to the increase of human beings rather than that the defective organizations which they possess should be perpetuated. Such a rule respecting the choice of husbands would be wholly unnecessary in most barbarous countries, and was unknown in ancient times, as it was then cus-

tomary, as it is now among uncivilized nations, to destroy congenital cripples at birth. A dyspeptic, a chronic rheumatic, an asthmatic, a paralytic, a person with a hereditary tendency to scrofula, in fact, any individual suffering with any marked deviation from the standard of health, will not be looked upon by a healthy young woman who considers the matter of matrimony from the stand-point of physiology and physical health, as desirable for a husband.

3. He should be a man of good habits. By good habits we mean not only steady, industrious, thrifty habits with a disposition to economize and avoid extravagance, but freedom from such habits as the use of liquor, tobacco, and other stimulants and narcotics. Young women sometimes marry young men in a sort of missionary spirit, thinking that through their influence over them they will be able to effect a reform and thus wean them from the injurious habits which they may have contracted. This is an illusion which but a few weeks of married life suffice to dispel. A young man who does not care enough for the young lady whom he wishes to become his wife to reform before marriage, will never reform afterward. In fact, it is a very dangerous piece of business for a young woman to run the risk of marrying a man who has been "just a little fast." Habits of dissipation when once thoroughly fastened upon an individual are not easily shaken off, and though he may reform for a time, favorable circumstances will be likely to lead him back into the same channel again.

The notion which we sometimes hear expressed, that "reformed rakes make the best husbands," is as

far from the truth as anything well can be. It is exceedingly rare that a man who has lived a rakish life ever makes such a thorough reform as to be in any way worthy of the affection of a pure-minded young woman; and if the reform of his moral nature be such as to make him not unworthy of her confidence and love, the chances are ten to one that his physical system is so depraved as the result of his lapses from virtue that he is wholly unfit to become the husband of a pure and healthy wife. Some years ago, we remonstrated in the most earnest manner with a young lady who was about to marry a young man whom we knew to have lived for years a dissolute life and whom we had treated for the terrible disease which usually results from such a life. She replied that if the disease from which he was suffering was not in such a stage that she was liable to catch it, she should not consider it any objection to accepting him as a husband.

The readiness with which women forgive the lapses from virtue in man is astounding when we consider their unforgiving, unrelenting disposition toward those of their own sex who may have fallen, as well as the contemptuous manner in which men treat such women, even those who may have been the victims of their own lewdness. What pure-minded man, who possessed even a modicum of self-respect, would think of asking a woman who had lived a life of shame to become his wife? It is rare indeed that a man can be found that will accept as his wife a woman who may have lapsed from virtue even once and under circumstances which ought to form an apology

for the sin, if such a sin can be condoned. • Until men are willing to accept without question, as wives, women who, they have reason to believe, have ignored the requirements of chastity and purity, it will be *just* as well as *wise* for women to be equally scrupulous respecting the conduct before marriage of those who wish to become their husbands.

We cannot leave this point without a word respecting that most detestable of popular vices, tobacco-using. No young woman who has any appreciation of the possible suffering she is likely to bring upon herself, will consent to marry a man who is addicted to the weed. A woman whose husband uses either pipe or cigar, lives in a nicotine-poisoned atmosphere. She derives from the narcotic none of the peculiar solacing influence which renders it so fascinating to those who become accustomed to its use, though obliged to inhale its nauseating fumes. We have known wives who suffered more than tongue can describe during long years of intimate association with men who had rendered themselves objects of dread and repugnance through their devotion to the vile habit of tobacco-using. Let the young women of the land say resolutely that they will marry no man who is addicted to the use of the weed in any form, and tobacco-using will soon become a thing of the past. It is high time that the women of this and all other civilized nations should rise up *en masse* in opposition to the tyranny of this barbarous and debasing habit. Until some effort of this sort is made, the practice will go on gaining victims from year to year, until the man who does not carry a quid in his cheek, or a

pipe or cigar in his mouth, will be considered an oddity. Indeed, such is almost the case at the present day. The men who are not addicted to the uncleanly practice in one form or another, are few and far between. But let the young women declare once for all that they will have no man for a husband who loves a vile weed better than he loves the woman whom he wishes to make his wife, and we shall have a reform at once.

4. He should be of suitable temperament. By proper temperament we do not mean that the young man who will make the best husband for a young woman must be her exact counterpart in temperament, nor that he should be her opposite in this particular. What is necessary for mutual happiness is that people who are to live together in the close bonds of wedded life should be of such temperaments as to be mutually agreeable to each other. The advice given by a somewhat noted writer on this subject, that exact counterparts should be selected as partners for life, is exceedingly absurd and certain to result badly if put in practice; and the same may be said of advice given by some phrenologists, that persons of opposite temperament should be selected for husband or wife. Neither similarity nor oppositeness should be sought for, but agreeableness. Sometimes a person will dislike exceedingly another individual for a trait of character which is very prominent in himself. Conceited people are of all others the most likely to be disgusted with conceit when manifested in other persons than themselves. The same is true with reference to various other prominent traits, as

pride, jealousy, suspicion, etc. The so-called science of phrenology has been greatly abused in the attempt to make it a guide in the formation of life-partnerships. Nothing is more absurd than the supposition that the adaptation of young men and young women for each other can be decided by scrutinizing the physiognomy or fumbling the cranium. A great amount of mischief has been done by phrenologists who have attempted to regulate matrimonial unions according to their opinion of the bumps. The only way in which mutual adaptation can be learned is by acquaintance, which should be of such a character, and carried on under such circumstances as to lead the individuals to a correct and just estimate of each other's character. Ability, wealth, position in society, good looks, brilliant prospects,—none of these good qualities should be allowed to turn the scale against an objectionable temperament, as an agreeable disposition in a husband will do more to contribute to a wife's happiness than all other circumstances combined.

5. *May he be a Cousin?*—This question has been much discussed, and numerous statistics have been collected which, in the hands of one writer, establish the fact that the marriage of cousins is pretty certain to result in idiotic progeny, while in the hands of another writer statistics are made to tell a very different story. Anyone who has ever attempted to establish a point by appealing to statistics, is aware of the fact that this sort of evidence can be made to prove almost anything according to the desires or the predilections of the investigator. It is now generally

conceded that the marriage of cousins is not likely to result in any mental or physical defects in the children, provided both parents are perfectly healthy; but it should be recollected that the blood-relationship of individuals greatly increases the influence of an objectionable tendency in such a manner as to bring it into activity in the offspring. In the second place, a young woman should never marry her cousin without making a careful investigation of the causes of death of the relatives of both, back to the common ancestor, gaining all possible information concerning the diseases which have been most prominent in the family.

6. He should be of good morals and good reputation. The readiness with which young women form alliances with young men whose society is avoided by other young men who wish to retain their reputation for respectability, is simply astounding; yet such cases are of almost every day occurrence. Young women will often place the most implicit confidence in young men whose employers would not trust them with a dollar, and whose reputation for virtue and morality is one hundred per cent below par. A young woman who really respects herself, and who has any solicitude respecting her future happiness and that of her family, will refuse to marry a man who makes a mock of religion and sneers at morality, who boasts of infidelity and makes light of sacred things. A man who has none of the restraints of religion or morality to keep him in the path of virtue and rectitude, cannot properly perform the duties of a husband and father; and no matter how earnest his protestations of reform, he should be discarded, or

held on probation until positive evidence of a genuine reform are to be seen.

7. The prospective husband should be of proportionate size; that is, a very small woman should not select a very large man for a husband, or vice versa. The latter selection is not very likely to be made, as large women very seldom desire as husbands very small men; but small women are very apt to prefer for husbands very tall and large men. Such a union is physically improper and likely to entail on the wife no small amount of physical suffering and increase the dangers of childbirth many fold. There ought to be physical as well as mental and moral adaptation between husband and wife.

Who Ought not to Marry.—A young woman who is herself subject to hereditary physical or mental disease or physical deformity of a serious character, ought to consider it her duty to refuse an offer of marriage on this account. Of course an extreme view must not be taken of this restriction. We do not wish to exclude nine-tenths of the young women from entering the marriage state; but any disability which is likely to be transmitted to children, or to make the individual a life-long invalid, should be considered an insurmountable obstacle to marriage. A young man may be wholly willing to accept an invalid for a wife at the time of marriage, and may for a few months or years remain reconciled to having his house made a hospital and to pay all his hard earnings to the doctors; but the time will come when this sort of thing will be no longer enjoyed, and his affections will be gradually weaned from the woman whom he

promised to love and cherish in health or disease, etc. Such a marriage will not be likely to be a happy one.

The idea which many women have, and which is often encouraged by physicians, that marriage will effect a cure of various local affections to which the sex is liable, should not be encouraged. The fact is that marriage as a rule aggravates instead of mitigating local diseases which may have become thoroughly established before marriage. It is true that if a woman is suffering with an ante flexion of the womb, the occurrence of pregnancy—which is not at all likely, as such women are generally sterile—will often effect a cure. But this is about the only class of cases in which improvement as the result of marriage may be looked for, and in these cases it is as likely to prove detrimental as beneficial. We have met a good many cases in which young women have been sadly disappointed in the results of matrimony as a curative means. Instead of gaining in health, they have declined from the outset, and have found their sufferings aggravated to such a degree as to render life exceedingly wretched and miserable. A woman ought to be enjoying the highest health when she ventures to enter upon a sphere which will demand all the vigor and vitality which she possesses or can command to enable her to faithfully perform her imposed duties.

A “good-for-nothing” young woman has no right to marry. A woman has a right to expect in a man the qualifications of a good husband, such as will enable him to provide for his family the comforts of life and the opportunities for culture required by their

position in society. A young woman who is not herself by nature or education fitted to make a home happy, to superintend or perform, if necessary, the duties of a well regulated household, has no right to impose herself upon any man as a fit person to become his companion for life. The world is full of good-for-nothing girls, as well as good-for-nothing young men,—girls who have never been taught by their mothers the simple arts of housewifery and who are as unprepared as the merest child to take charge of the affairs of a household. It is time that this good-for-nothingness were looked upon as an evidence of unfitness for marriage; and it is to be hoped that public sentiment will soon demand the institution of schools for instruction in housewifery and the training of women to become worthy and helpful wives.

A Word of Advice.—Some years ago on inquiring why a certain estimable young woman had married a most disagreeable and unworthy man, we were answered that “She married him to get rid of him.” The young man pressed his suit with such unyielding perseverance, even after he had been repeatedly repulsed, that the young lady weakly yielded as the easiest method by which to get rid of his importunities. As might be expected almost from the very day when her reluctant consent to be his wife was given, his kind caresses ceased and the tyranny and ugliness of temper which he manifested rendered her whole life indescribably wretched. During the first few months of marriage, when her eyes had become thoroughly opened to the folly of her course and the dreadful slavery to which she had bound herself, reason was

nearly dethroned ; but it was too late to correct the fatal mistake. She had nothing to do but bear it with as much calmness and patience as she could summon. What could be expected other than that the offspring of such a union should receive the impress of the mother's unhappy mental state ? In the case referred to, the first-born, a son, possessed in many respects marked ability ; but at an early age he manifested peculiar traits of character which gradually became more and more prominent until the will became powerless to maintain the mental equilibrium, and reason was dethroned. This young man, notwithstanding his natural abilities and thorough college training, fitting him under ordinary circumstances for a position of high usefulness, is to-day incarcerated within the walls of an insane asylum with little or no hope of recovery.

The folly of marrying a man to get rid of him does not need further emphasis. This is the most impracticable of all methods of dismissing a disagreeable suitor. A young woman who is not pleased with the man who wishes to ask her hand in marriage, should frankly and promptly tell him so, and if she is satisfied that there is no mutual adaptation, or that on further acquaintance she will not be likely to change her views, the dismissal should be final. The interests involved are too great to be trifled with, and no young woman can afford to allow herself to be "bullied" into a marriage with a man whom she does not and cannot love.

Neither wealth, social position, nor any other qualifications than those which pertain to the individ-

ual character should influence a woman in her selection of a husband. Women who marry for money are sure, sooner or later, to be made most unhappy by so doing. No woman can patiently bear the taunts of having "married a man for money," year after year, while she may be supposed to be waiting for his decease so as to get entire control of the coveted treasures.

Cases are not rare in which women marry "to avoid becoming old maids." We cannot understand why a woman should look forward with dread to a life of celibacy more than a man, or at any rate, why it should be so utterly abhorred that an alliance of almost any sort should be considered preferable to it. Perhaps the education of girls in the idea that the condition of an old maid is one to be abhorred, is chiefly responsible for the prevalence of this sentiment among young ladies. The ideal old maid is one who is scrupulously neat in appearance, by most people considered very nice, possibly somewhat prudish in her notions of modesty and unwilling to place any confidence in the opposite sex, but a very useful sort of person in cases of illness, a ready worker in Sabbath-schools, home missions, and temperance organizations, and in fact on the whole, quite an indispensable member of society. There is certainly nothing to be abhorred in this, and a woman would better by far be an old maid and die homeless and childless than to live the life of wretchedness and unhappiness sure to result from an ill-mated marriage.

Little Girls should not Marry.—We have already dwelt upon the importance of mature develop-

ment as a preparation for the marriage state, but we wish to impress this fact again upon the minds of our fair young readers as one of great importance. A little girl is not prepared to select a husband, and is not fit to become a wife. She cannot safely ignore the laws of nature which demand that she should have time for physical, mental, and moral development. No circumstances whatever can justify a girl-marriage. Such unions are pretty certain to turn out bad. Only recently a case has come to our notice in which a girl of fifteen ran away from home to live with a young man of twenty to avoid meeting a step-mother whom her father was about to introduce into his household. She found out too late that the young man in whom she had placed her confidence was a *roué* of the worst stamp, his constitution being shattered by habits of vice and dissipation, and at the time when she came under our care as a patient her own system was thoroughly saturated with the venom of a foul disease.

Marriage is an institution for men and women, not for boys and girls, and common sense would suggest that a young man or young woman whose age is such that the law does not recognize him or her as capable of making a contract involving simply matters of temporal interest, is wholly unfitted for making a contract which involves not only the present and future happiness of himself and another, but may exert a baneful influence to an incalculable extent over succeeding generations.

The restrictions we have given respecting the age at which marriage may be contracted, should be looked upon as imperative. The limit placed is too low rather

than otherwise. Many girls are not fitted for marriage by their mental or physical development before the age of twenty-five or twenty-six. In fact, some girls as well as some boys never become old enough to marry, apparently remaining, mentally at least, in a state of childhood.

Courting.—We have no intention of attempting to point out in these paragraphs the exact manner in which courtship should be conducted ; but we wish to call attention to some of the evils which grow out of the popular manner of conducting courtship. Court-*ing*, as the word is generally understood in this country, seems to be peculiar to America. In most other countries, unmarried persons are by the laws of custom and society forbidden to associate with such unrestrained freedom as is customary in this country. If a young woman in France should allow herself to take long walks or rides with a man without some female companion, or even to visit places of amusement or recreation, or to be shut up with him in a parlor or sitting-room with the light turned down or wholly extinguished until the small hours of the night, her reputation would be ruined. She would be looked upon as a loose character, unfit to associate with respectable people. We do not pretend to say that chastity is better preserved among the young women of France than among American young women ; but we do know that the unrestricted license allowed in the association of young unmarried men and women presents the most favorable opportunities for the lapses from virtue which are altogether too common, more so than the majority of persons would be willing to believe.

This is not our only objection to the popular method of courting. The primary object of courtship should be to allow the parties to become acquainted with each other's characters so as to know whether or not there exists such mutual adaptation as to make a life partnership desirable or likely to be a happy one. Courtships are not, however, usually conducted in such a manner as to enable either party to arrive at a just estimate of the character of the other. The conditions are made as artificial as possible. Each endeavors by various artifices to appear in the most attractive and advantageous light possible. The whole experience is generally a series of shams from beginning to end. Young people never really get acquainted with each other until after they are married. Then, divested of all pretense, the real character appears in its true light, often to the great disappointment of both parties.

Courtship should be conducted in such a manner as to allow each to become acquainted with the other's real character just as it will appear in every-day life. It is the greatest folly imaginable for a young woman to pass herself off for more than she really is, or to attempt to sustain a character which she cannot really maintain every day and month and year of her life. The husband, if he is entangled by deception, will sooner or later be undeceived, and then, whether he owns it or not, his former admiration will be turned to disgust and loathing. If a young woman wishes to secure a really good husband, let her appear exactly as she is. Let her be perfectly natural. Then a man who is sufficiently pleased with her to

wish to make her his wife, will be likely to prove himself a kind and devoted husband, one on whom she can lean with confidence during all the coming years.

Mothers should exercise careful supervision over their daughters when they have reached an age proper for marriage, and have begun to receive the attentions of gentlemen friends. This is the time above all others when a young woman ought to make a confidant of her mother, and mothers ought to treat their daughters in such a manner as to win their confidence and respect. The young women who marry contrary to their parents' wishes and against their advice almost always regret having done so, and endure life-long misery in consequence of the one false step.

But they are not always so much to blame as their parents. A mother who has pursued the right course with her daughter from early childhood to maturity, will always hold her confidence, and can exert so strong an influence over her as to be able to mold her action, at least to a very great degree, at this most important epoch of life.

The advice of a parent or friend of mature years may be invaluable at this time, and a young woman should never think of committing her happiness to the keeping of any young man without first consulting her mother or some other female friend competent to give advice in case she has no mother to consult.

The habit of sitting up late at night during courtship is one which should be condemned and discountenanced. A young woman of proper age need not be ashamed of the attentions of a young man worthy to become her husband, and no attempt at concealment

is necessary. Young people can judge of each other's characters much better by daylight than lamplight. We agree with an author of considerable experience who suggests that courting can best be done by young people when engaged in the every-day duties of life. Then there are good opportunities to judge of each other's qualities and capabilities in the most practical manner possible.

Flirting.—Every true man despises the flirt. A young woman who trifles with the affections of young men, purposely attracting their attention and displaying her charms in such a manner as to fascinate and entangle their affections for the mere purpose of amusement or to gratify an unholy pride or to rouse the jealousies of some rival, is unworthy ever to become the wife of a sincere and noble-minded man. Such a woman's affections gradually wither and her motives become depraved until she is utterly unfitted to become a dutiful wife or a patient, sympathizing mother.

THE SOCIAL EVIL.

This portion of our subject is one which we would gladly avoid; but we have a few words to say which we think ought to be said, and which we may not depend upon being said by any one else to the same audience to which we wish to speak, and so we address ourself to the subject, though with great reluctance, with a sense of duty to be done regardless of its unpleasantness.

Prostitution is an evil which is undoubtedly rap-

idly on the increase. This fact has become so noticeable and the evil so alarming in its proportions, that it has attracted the attention of many of the ablest thinkers and students of social science in all civilized lands. Considered in all its bearings, the subject is a large one, and we shall not attempt to canvass it in all its various phases, but only to note a few points in connection with the question of causation and prevention.

Some idea of the proportions of this monster evil may be gathered from the statistics of the number of fallen women and of the diseases which result from prostitution. We are informed by a reliable authority that there are at the present time no less than 50,000 fallen women in England alone who are devoted to a life of shame. The number of this class in this country must be very much greater, even if the proportion to the population is the same, which is undoubtedly the case. It should be remembered also that these figures do not give an adequate idea of the extent of the vice for the reason that there is a very large class of lewd women known as "kept mistresses," whose lapses from virtue are known only to themselves and their companions in sin, while to the public they appear as respectable as their sisters. This class in fact probably greatly exceeds in numbers those who are known as common prostitutes. Lax morals have become so common at the present day that it is impossible to form an estimate of the extent of the evil which we are considering. Its very nature causes those who are its victims to avoid publicity in every way possible, and society has always endeav-

ored to hide its eyes from the foul ulcer festering in its midst. But it is useless to ignore the evil simply because it is loathsome and obnoxious to our moral sense, for it will obtrude itself upon us in its most disgusting forms and often when we least expect it in spite of our aversion and disinclination to consider it.

Cases of the horrible diseases which result from this vice are known to be rapidly on the increase. A prominent sanitary officer of one of our large cities affirms that not less than one-fifth of the entire population of the city is tainted with venereal disease in some form. If this is true of the city in question, it is undoubtedly true of most other large cities on this continent. There is good evidence for believing that many of the cases of cancer and hopeless disease of the heart, together with much of the scrofula and consumption which the physician meets at every turn in his daily rounds of practice, owes its existence to this foul source if not in the sufferer, in a parent or grandparent. The most contagious form of venereal disease, syphilis, has become so common, as shown by Dr. Gihon in a paper read by him at a late meeting of the American Public Health Association, that it is almost dangerous to travel abroad, so great is the peril of contracting the disease. The closet of the popular hotel or the palace car, the possibly unchanged linen of the sleeping car or hotel, even the food prepared by diseased cooks and served by diseased waiters in hotels and restaurants, all afford possible opportunities for contracting a malady which may blight several generations of human lives.

The influences which lead women to enter a life of

shame are varied and numerous. We shall not attempt to consider them all nor even to mention them; but wish to call attention to a few of the influences of this sort which we think are not understood as they should be, or are at least greatly underestimated. And first we wish to note the fact that the whole tendency of modern fashionable life is in the highest degree calculated to stimulate the development of the emotional nature, which leads directly to the exaggeration of the propensities, and none more than those connected with reproduction. The cultivation of the "esthetic" at the expense of the practical, and the devotion to the thousand and one nothings which make up the sum total of a fashionable woman's life, are by no means conducive to the growth of purity and the repression of the animal instincts. With an untrained mind, that is, one which has not cultivated self-control and the habit of making a careful analysis of the feelings, one emotion is often converted into another seemingly wholly unlike and incompatible with the first. The cultivation of the emotional nature at the expense of the reasoning faculties is on this account a most serious error. Theater-going, novel-reading, dancing, attendance at fashionable parties, flirtation, and a variety of other practices exceedingly common in the life of the average young lady, are the means by which the moral sense becomes depraved and the character so unbalanced as to break down the barriers to unchastity, and open the way for the encroachments of the tempter.

The courting customs of American young people we regard as directly opposed to the interests of fe-

male virtue. The conditions are often such as not only to allow of temptation to depart from the path of virtue, but to directly stimulate the passions in the highest degree and thus destroy the power to resist temptation should it come.

The looseness in the associations of the sexes we regard one of the most prolific of all the predisposing as well as exciting causes of vice, and this is particularly true of the unreserved manner in which young people of the opposite sex associate during courtship. Often have we seen a young woman whose course had previously been in every respect unexceptional, rapidly deteriorate under the influence of a courtship conducted in the manner referred to. We will not dwell further upon this point in this connection, however, as we shall take occasion to refer to it at length elsewhere in this work.

Womanly modesty is a quality which is becoming quite too rare. The manners of the times are such as to abolish the reserve and modesty so characteristic of maidenhood in olden times. A bashful girl is much more difficult to find now-a-days than was the case a quarter of a century ago. Children, girls especially, are too early accustomed to publicity, and are led to believe that bashfulness is a sin next to falsehood or theft. A certain forwardness of manner is becoming exceedingly prevalent among young girls. By many, this trait is considered an evidence of smartness, and is encouraged; to our mind, it is a most alarming indication of threatened, if not actual, deterioration in woman of those qualities upon the preservation of which depends the maintenance of virtue and purity.

This matter is one which should receive the earnest attention of mothers, teachers, and all who have to do with the education of girls. The old-fashioned modesty and innocent simplicity of manner must be presented as the pattern to be followed instead of the bold and flippant style of bearing so exceedingly common among the girls of the present day. A retiring and reserved manner is one of the very best safeguards to virtue, and woman cannot afford to dispense with so important an aid to purity in the nineteenth century better than in generations past and gone.

Mothers should check in their daughters the very first manifestations of a tendency to boldness of manner, and should carefully shield them from the influence of those who exhibit this unfortunate trait.

The dangerous idea is becoming prevalent that young women as well as young men may "sow their wild oats" without committing any very great crime, providing their sin is not found out. Thousands of those who with this idea in their minds yield to the promptings of passion, would not for a moment entertain a thought of entering upon a life of vice. They have too much respect for themselves and for their friends to allow them to choose such a course. They have read so much of the departures from virtue, in the public prints and the fashionable literature of the day in which the transgression is often pictured in such colors as to arouse and stimulate a prurient curiosity to the highest degree, that, with favoring circumstances, they are unprepared to resist a strong temptation to yield "just once" to the promptings of the lower nature, thoroughly expecting to return im-

mediately to the path of virtue and to make no further digressions. But the barrier once broken down, cannot be so easily erected again. When a woman has once allowed the bulwark of modesty to be invaded, she has no longer any defense.

Purity once gone, is gone forever. A mind once sullied with vice is marred forever. Even in eternity will remain some reminder of the sin, though thorough and bitter repentance may have saved the victim of impurity from eternal ruin.

Men have been charged with being principally responsible for the fall of young women from the path of virtue. There is no doubt that thousands of young women are enticed into sin by the promise of marriage, and on finding themselves deserted by the heartless wretches who have accomplished their ruin, disowned by their friends, and outcasts from society, in despair enter upon a life of shame as a means of gaining a livelihood; but we believe that this is by no means the most common way in which the ranks of the denizens of the *demi-monde* are recruited. The assertion is made by those who have made a careful investigation of the personal history of a large number of these unfortunate creatures that a very small proportion of them are led astray by men under promise of marriage. There is no doubt that men are instrumental in leading them to ruin in a vast number of cases; but the evidence is very strong that these unfortunate creatures are in the majority of cases led astray by their own depraved and uncontrolled impulses. A young woman whose mind is pure and free from unhallowed desires is perfectly safe from

temptation in this direction. Such a person would detect and instantly repel the very first advances of an impure character. The young women who fall easy prey to the snares of rakes and libertines are those whose minds have been filled with sinful thoughts, and who have not subdued the first beginnings of impulses which, meeting no restraint, have grown to be almost uncontrollable.

Vile men offer the opportunity for sin, but the real cause of transgression on the part of a young woman who falls from virtue is the previous preparation of her own mind for such a step through the demoralizing influence of impure thoughts. The conversion of evil thoughts into evil acts is only a question of time and opportunity. A mind accustomed to think of sin comes to look upon it as desirable, and loses all appreciation of its hideousness and its consequences. The change from innocence to guilt, from purity to vice, is not a sudden transition. The work of ruin is not accomplished by one fatal plunge, but by little departures, small harborings of sinful thoughts, until the mind becomes defenseless against the encroachments of sin.

Purity of life depends upon purity of mind; and the only way to secure the first is by the cultivation of the second. A mind left to revel in voluptuousness will sooner or later lead the possessor to overt acts of sin unless the restraint of circumstances is more than ordinarily strong; and even if this is not the case, the baleful influence of the mental vice will be indelibly stamped upon the physical as well as the mental character of the individual, giving rise to positive and even incurable disease.

While it is true that the seducer is usually a male, this is by no means always the case. Not very long ago a young man came under our care for treatment for epilepsy of a very peculiar type which was evidently the result of sexual abuse. The patient asserted that he had never practiced the habit of masturbation, but admitted that he had been guilty of other sexual excesses, and when closely questioned confessed to a degree of abandonment to his passions which was scarcely credible. His confessions were made with the tears streaming down his face; and his evident sincerity left no room to doubt his statement that he was led into sin by a neighbor's hired girl who was several years his senior, when he was but fourteen years of age.

Such cases as the above are undoubtedly exceptional; but they do not unfairly represent the part which is often acted by girls and young women in inviting their own ruin and accomplishing that of young men who might otherwise have remained pure. We refer to the loose conduct and "gushing" manners to which many girls are addicted. The want of proper restraint and reserve in their intercourse with boys and young men, and the liberties and familiarities which they not only allow but invite, and which are tolerated by the customs of society, are in the highest degree calculated to stimulate the passions of young men and to lead them to lose respect for the sanctity and purity of maidenhood, and to believe that young ladies whose manner is such as referred to will be only too willing to accede to them any favor they may ask. While we are willing that young men

should be charged with a large share of the lapses from virtue on the part of girls and young women, we feel confident that no young woman who conducts herself with proper reserve and modesty toward the opposite sex is in the slightest danger of injury from this source. The only way to reform young men is to raise the standard of conduct among young women.

After all, the only safeguard for virtue is religion. The young women as well as the young men of the land cannot afford to get along without the religion of Christ, which offers help to the weak and tempted, and provides a way of escape from every snare and temptation; and most of all enables an individual to obtain a victory over himself or herself, and by its calming and purifying influence subdues the passions and cleanses the mind from impurity and sensuality. The best prescription we can make for a person whose tendencies are naturally in a downward direction is to get "pure and undefiled religion." Nothing else is so good an antidote for sensuality. When beset with impure images and unhallowed desires, fly to some secluded spot, and on bended knees send up to Heaven a petition for help from the Mighty One who is "able to save to the uttermost those who come unto him."

One more suggestion we would make. Physical exercise of a vigorous character exerts a most salutary influence upon the mind which is beset with prurient thoughts. Really vigorous muscular work has a remarkably refrigerating influence upon the passions, and ought to be systematically engaged in by those who find themselves obliged to wage a constant warfare with impure thoughts. Exercise should be taken

to the extent of real fatigue, and will be found beneficial in many other ways than that for which it is suggested. If young ladies were brought up to work as their grandmothers were, there would be far less need for books of this character, and the army of outcasts from society which now infests every city in the land and is pouring out into the life blood of the race a horrible stream of death, deformity, and disease, would receive a much smaller number of recruits.



THE WIFE.



MARRIAGE is an institution of divine ordination, having its origin in Eden, the birth-place of the race. The duties and responsibilities of a wife are in no way second to those of her husband. Her sphere of usefulness is necessarily different from his, but it is in no way secondary in importance. The true wife may exert an influence upon her husband and through him upon society which may determine the destiny of nations. Many a man who has risen to greatness has been proud to acknowledge that the real credit of his grandest achievements was as much or more due to his wife than to himself. The Wise Man has well said, "Who can find a virtuous woman? for her price is far above rubies. The heart of her husband doth safely trust in her. She will do him good and not evil all the days of her life."

The responsibilities and dignity of wifehood is in recent times altogether too little respected. Too often a wife is regarded simply as an ornament for the parlor or a manager of the housekeeping. Even women themselves are prone to take this narrow view of their sphere of usefulness. (A woman who really appreci-

ates the importance of her position as a wife, the opportunity for powerful influence which she enjoys, and the grave responsibilities which devolve upon her, will not complain that her sphere of usefulness is not as broad and her mission as high and sacred as she can desire. Among the women of the day who are calling for a higher and broader usefulness for woman, are two distinct classes: one is earnestly seeking to lead women to see and comprehend the true import of their mission as wives and mothers, and to appreciate the fact of the momentous responsibilities which grow out of their ability to shape the destinies of the race; another class, ignoring this natural and important field of work for woman, is clamoring for a place for her outside the order of nature. We have no objection to granting to woman the same freedom of action which is enjoyed by man. We are decidedly in favor of doing so; but at the same time we most profoundly hope that any effort which has for its object the diversion of woman from her proper and natural sphere will not be attended with success.

But we have to deal chiefly with the physical relations of wifehood, and our limited space forbids that we should enter largely into the discussion of topics which do not bear upon this in the most direct manner. Let us then inquire respecting

The Import of Marriage.—Many a young woman enters upon the marriage relation without the faintest idea of the character of the new duties, dangers, and responsibilities which she has assumed. The revelation made to her is often a very different picture from that which her fancy has sketched; and the contrast

between the real and the ideal is often so great that it is not to be wondered at that so many soon become discontented with their lot. We consider it of the greatest importance that young women should be thoroughly informed of the nature of the relations which they are to assume in marriage before entering upon its obligations. Mothers are almost universally remiss in their duty to their daughters in this regard. Many mothers seem to regard it a sort of virtue in their daughters that they are wholly ignorant of the import of marriage and its duties, and purposely keep them in ignorance, repressing in them any desire to acquire knowledge on the subject. Such a course we regard as criminally foolish, and the result of a perverted education on the part of the mothers of the present generation. Not until women come to look upon marriage as a sacred and divine institution, and themselves illuminate and glorify it by developing through its means a nobler and higher type of manhood and womanhood, and not until mothers come to accept and fully comprehend the fact that all physiological knowledge is in itself pure and chaste, can we hope to see any great reform in the direction indicated; and so we have written this chapter for the purpose of contributing in a small degree to the attainment of this end.

As previously stated, the prime object of marriage as an institution, considered from a physiological stand-point, is procreation, or the perpetuation of the species. The full significance of this physiological fact has been sufficiently hinted at in the introductory portion of this work. On this subject every woman

should have full and reliable information before entering the marriage relation. Mothers should not think that because they were ignorant, their daughters should be equally so. Thousands of women might have saved themselves from life-long suffering had they received the proper instruction at the right time. The old adage, "Where ignorance is bliss, 'tis folly to be wise," does not apply to this kind of knowledge, imparted at the proper time; the lack of such knowledge is one of the most prolific sources of danger to which a woman can be exposed.

The Hygiene of Marriage.—At no period of a woman's life is the observance of the requirements of laws relating to health of greater importance than at the beginning of married life. At this time a new set of functions is brought into activity which sustain a most important relation to other of the bodily functions. These functions involve the most profound agitation of the system and the most lavish expenditure of nervous energy of which the body is capable. It is evident, then, that all should not be left to instinct, but that reason should be made the umpire, and its verdicts be regarded final. The set of organs which after marriage are for the first time brought into legitimate activity, are highly sensitive, and being subjected to excitements of an unusual character are exceedingly liable to take on inflammation. We have met scores of cases in which the most distressing and obstinate maladies had originated with the excesses of the first few weeks of married life. Self-control at this time on the part of both husband and wife is of the utmost consequence. Many times have

we been told by women who had suffered more than words could describe for many years, "I have never been a well woman since the night of my marriage." This sort of an introduction to a divine and sacred institution is not in accordance with the dictates of reason or morality. At this time of all others, the stormy passions should be kept at bay. If her husband is disposed to disregard the dictates of reason and common sense, either through ignorance or the promptings of passion, the wife should not hesitate to make known to him her wishes, and the man is too much of a brute to be worthy of the love and respect of a virtuous woman who will not regard the desires of the woman whom he has promised to love and protect. The most heroic battle which many a man can fight is to protect his wife from his own lustful passions. Every young wife should know that it is her duty as well as her privilege to protect herself from the possible causes of life-long suffering. It is no woman's duty to surrender herself soul and body to her husband simply because he has promised to "love and protect her."

The beginning as well as the full fruition of physiological marriage is accompanied by a more or less considerable amount of suffering on the part of the wife. This is in part due to the highly sensitive character of the mucous surfaces, and in part to the presence of the hymen. The rupture of the latter membrane is often accompanied by a slight hemorrhage which was in ancient times considered as a proof of virginity, though it is now very well known to be unreliable as a test of previous chastity, since it

is frequently absent naturally, or may be obliterated or ruptured by other means, or may be so imperfectly developed or so dense in its structure that no rupture occurs. It should be borne in mind, however, that it is not only possible for such a rupture to take place, but that undue violence may give rise to a dangerous and even fatal hemorrhage, or to an equally dangerous inflammation. A few years ago we had under treatment a case in which an inflammation was thus produced which required months of treatment to subdue. The use of warm sitz baths or sponging with quite warm water and the local application of unguents of various sorts will serve in a great measure to prevent as well as relieve suffering from this cause; but moderation and self-restraint are the most serviceable of all precautions. If any considerable degree of irritation is set up, especially if attended by severe pain in the pelvis, across the lower part of the back and bowels, or by fever, entire rest should be insisted upon for several days. Fomentations should be applied across the bowels, and vaginal injections of hot water should be administered every three or four hours. The bowels, if constipated, should be relieved by a warm enema. These are the very best means of preventing serious inflammation and of treating an inflammation which has already begun. The only apparatus required is a common wash tub or a tin sitz-bath tub, and a good syringe. For the latter we recommend the syphon syringe, which excels all others in simplicity, efficiency, and durability. It is also automatic in action, requiring no attention while in use. Valve or piston syringes are unreliable. By

the adoption of these simple measures of treatment at the very outset, even at the cost of considerable inconvenience, a chronic leucorrhœa, uterine inflammation or congestion, or a possibly fatal pelvic cellulitis may in nineteen cases out of twenty be prevented.

In rare cases, an imperforate or thickened hymen presents an obstacle to the consummation of marriage which should receive attention from a competent surgeon at an early date, before inflammation has been provoked.

Wedding Journeys.—The fashionable custom of taking a journey immediately after marriage is not altogether to be commended. The young wife needs at this time rest and care such as cannot often be commanded among strangers, at least when being rapidly hurried from place to place, stopping at hotels, or at fashionable watering-places, or popular pleasure resorts. The exposures and excesses of a wedding journey have cost more than one young bride her life, and in hundreds of cases have laid the foundation of disease which has for years baffled the skill of the most experienced and sagacious physicians. We feel that too much cannot be said in condemnation of this absurd fashion, and do not miss an opportunity to condemn it.

Excesses.—We regard it of the utmost importance that plain words should be spoken on the important subject of marital excesses. The popular supposition seems to be that any amount of indulgence of the passions is made permissible by the marriage ceremony. No view could be more erroneous. Considered from a physiological stand-point, and we think

from a moral stand-point as well, there is as great an amount of violation of sexual law within the marriage pale as without. Unbridled lust is sin under all circumstances; and however man may wink at these transgressions of law, Nature does not omit to enter a protest against them and to visit upon the transgressors a sure retribution. The results of marital excesses are to be seen everywhere in the rapid decline in health of newly married women, and the crowds of ladies of all ages from the young wife whose honey-moon is scarcely ended to the grey haired woman who has passed her climacteric, who frequent the offices of the popular gynecologists in our large cities, are to a large extent the victims of sexual transgression. Unfortunately, in the majority of cases, the fault lies elsewhere than at the door of the victim. We have spoken plainly on this point elsewhere. Women have long been taught that it is their duty to submit uncomplainingly to the will of their husbands, especially in matters of this sort, and in obedience to this teaching, and in ignorance of the consequences, or of their duty to themselves, they have allowed themselves to be made the victims of lust, by which they have had entailed upon them sufferings grievous to be borne. No man has a right to prostitute his wife to the mere gratification of a selfish propensity. With the wife rests the gravest responsibilities of the reproductive act, and with her should rest the responsibility of saying when she will incur the risk of her life in giving birth to a new being.

Many a woman is by her marriage vow introduced to a slavery far more galling and vastly more debas-

ing than that which cost this nation years of civil war and hundreds of thousands of lives to abolish. The great majority of sufferers keep their troubles wholly secret, knowing that they have little sympathy to expect from those who believe this to be the proper lot of woman,—a burden imposed upon her by the curse; but now and then a woman's sufferings become too great to be longer borne in silence, and the facts come to the surface. It is high time that there was a change of public sentiment in reference to this matter. Of all the rights to which a woman is entitled, that of the custody of her own body is the most indubitable.

We know that there are circumstances which complicate this question to such a degree as to make it difficult for a wife to decide what her duty is in any given case. We cannot lay down any rule to be followed without exceptions; but we do not hesitate to express what we believe to be the broad grounds on which the principles of human individuality and responsibility rest, leaving for each woman to decide for herself what her duty may be in any particular case.

A Suggestion from Nature.—The question as to what must be considered excess, is not so easily answered as asked. There are numerous questions involved in the consideration of the subject which we have not space even to notice in this connection. We shall simply call attention to a few facts which point with unmistakable clearness to the design of nature.

In many species of lower animals the reproductive act is performed only at certain periods for which a physiological preparation has taken place by the development simultaneously of the reproductive organs

in both sexes. This development occurs at certain periods only, the organs being during the interval in a state of inactivity. This is particularly noticeable in fishes, reptiles, and in certain species of birds. It is not, however, confined to these animals, as the same periodicity in the development to activity of the reproductive functions is observed in many species of mammals, especially those which produce young but once a year, as the deer, the wolf, and the fox. In the case of other animals which produce several broods a year, the sexual organs of the male are most of the time in the condition of development required for their physiological activity.

It seems to be the universal law of nature that the condition and desires of the female shall determine the time for activity of the reproductive functions. The females of most animals resolutely resist the advances of the males except at such times as the reproductive act may be properly and fruitfully performed. May we not pertinently inquire whether it is not probable that the much greater degree of erethism of the sexual organs observed in man than in lower animals—with few exceptions—is not the direct result of a wrong course of life continued through a long series of years, particularly the stimulating articles of food which have been for years becoming more and more generally used? We do not doubt that the free use of animal food has had a very marked influence in this direction. The direct effect of animal food, when largely used, is to increase the excitability of the nervous system, and to induce a condition of the nervous system in the highest degree

calculated to produce just such a result. This fact is very generally recognized by physiologists who have for many years claimed that the liberal use of animal food is necessary for human beings in order to secure the perpetuation of the species. If this suggestion is worthy of greater weight than a mere suggestion, it is important that it should be made of practical value as a means of enabling those who recognize the evils of unrestrained indulgence of the passions to attain the self-control necessary to enable them to obey the dictates of their own conscience and the plain teachings of nature.

Suggestions to Wives who Desire Children.—

We have often been consulted by women who greatly desired children, but had remained childless during several years of married life. We have often been able to make to such would-be mothers suggestions which have been of value to them. We do not intend to consider here the subject of sterility, as this condition will be considered quite fully elsewhere in this work; we wish simply to call attention to the fact that certain conditions are more favorable to conception than others, and to point out a few of the most important for the benefit of those who may earnestly desire children.

It is well known to physiologists that fecundation and development are much more likely to follow sexual union occurring either just before or just after the menstrual period. During the menstrual period the ovum is matured, but it is not discharged from the generative passages of the female until after the period of menstruation is passed. The ovum is usually

retained for several days, and during this time fecundation may occur. As it is very probable that fecundation takes place in the Fallopian tubes, it is possible that seminal fluid received in the passages of the female several days before the menstrual period, may be retained until the ovum is discharged from the ovary and comes in contact with it, thus securing its fecundation. It is a well-known fact that the spermatozoa of the seminal fluid will retain their vitality for several days in the fluids of the female generative passages. It may be laid down as a rule then that conception is much more likely to occur as the result of a union during the week preceding or the week following menstruation. An acute observer who has made a careful investigation of the subject asserts that in all but six or seven per cent of all pregnancies, conception occurs within this period. This same fact is also observed in lower animals in a marked degree.

Another circumstance which favors conception is rest after sexual congress. Women who do not conceive readily, frequently find themselves able to become pregnant by observing this rule; and the custom practiced by some women of dancing, lifting, riding horseback, or engaging in vigorous exercise of some other sort for the purpose of preventing conception is very well known. In some temperaments uterine contractions are very easily excited by physical effort of any kind, and hence absolute repose for a few hours after is necessary to secure a fruitful union.

The popular faith in various substances supposed to favor conception and in various trivial circumstances relating to the nature and position of the bed, etc.,

have no scientific basis. The too frequent repetition of the sexual act is a common cause of sterility.

We have not the space here to discuss the various causes of sterility, but would suggest that in case the simple suggestions made are not productive of the desired result, the barren woman should consult some competent physician for a careful examination. There are a great variety of causes which may prevent conception which may be remedied either by proper medical treatment or by a surgical operation. Those of these which may be removed by treatment at home or without the aid of a physician will be fully discussed in the section devoted to the diseases of women.

The Limitation of Offspring.—This is not the proper place for the discussion of the propriety of the limitation of offspring and the various problems which the question involves. Malthus and other writers have dwelt upon this theme exclusively and have proposed various theories and plans by which to accomplish the desired end. We have no theory to sustain or any original plan to suggest, but will call attention to a few physiological facts which have an important bearing on the subject. Whatever may be said with reference to the injury to the race which might result from a systematic employment of measures for the limitation of offspring, it cannot be questioned that there are circumstances under which, for the individual at least, this becomes very desirable. We may add, also, that there are circumstances under which the prevention of offspring is quite as desirable for posterity as for the parents. The fact that

there is a real necessity for some means by which the number of children may be restricted is at least suggested by the almost universal resort to some means for this purpose, often, as we shall show, means of a most injurious character.

The following may be considered as justifiable reasons for avoidance of offspring: 1. Ill health on the part of either parent; 2. Mental disease on the part of either father or mother; 3. Habits of intemperance or the opium-habit indulged to any degree on the part of either parent; 4. Deformity on the part of the mother, making childbirth dangerous to her own life; 5. Congenital deformity on the part of either parent when serious in character; 6. Hereditary mental disease not manifested in the parents but appearing in the children, as when the results of several successive conceptions have been insane or idiotic; 7. Lastly we mention poverty as one of the circumstances which may make it proper and desirable that the number of children should be limited.

We regard the notion that it is a woman's duty to bear as many children as possible during the child-bearing period of her life, as a relic of a barbarous age. Equally barbarous and more cruel is the disposition so marked in modern times, especially in fashionable women, to avoid bearing children at all hazards, regardless of the consequences to present or future health or happiness. It can certainly be no advantage to the world that persons who are too poor to be able to care for their children properly should bring into the world a large number of offspring to become paupers, vagabonds, and ultimately, in a great proportion of

ready for fecundation. A shortening of the period one week would of course obliterate the period. 2. There are exceptions to the general rule that one ovum is expelled before another is sufficiently matured to allow fecundation to take place. As previously stated, six or seven per cent of all conceptions occur during the period in which most women are exempt. Consequently, it appears that at least one woman in every fourteen is not exempt from the liability to conceive at any time. 3. The act of coitus hastens the maturation of the ovum so that a sexual union during the period of usual exemption may become fruitful by the early maturation of another ovum, the seminal fluid being retained in an active condition until fecundation can take place.

Notwithstanding the imperfect reliability of the above means of preventing conception, it is the only one which can be considered at all consistent with physiological principles except absolute continence. Even this, as we have elsewhere shown, is not strictly physiological, since the period immediately following menstruation is that in which the sexual act is most normal and most likely to be followed by conception.

The introduction of sponges into the vagina, the wearing of womb veils, shields, etc., for the purpose of preventing the normal result of the union of the sexes, are none of them wholly reliable, and all are injurious in character. The same must be said of the common practice of incomplete union and the still worse practice of injecting into the vagina cold water or fluids of various kinds for the purpose of destroying the seminal fluid. While there may be a differ-

ence in the evil results following the employment of these several methods, none are sufficiently harmless to allow of their continued use without imperiling the health of the wife, and in most cases the health of the husband as well. We have met hundreds of cases of severe disease of the womb in which the chief cause of the abnormal condition of the pelvic organs was the continuance of some of these practices for a course of years. We have no doubt that the congestions and irritation of the sensitive nerves of the parts arising from these various filthy maneuvers, practiced for the purpose of subverting the natural processes, are among the most common causes of malignant disease of the uterus, one of the most common and fatal of all the serious maladies to which the sex is subject, and one which is constantly becoming more and more frequent.

Another thing which is to be said with reference to the various means referred to is that none of them can be relied upon as certainly effective. Nature will frequently assert her sway in getting the start of the finest calculations to prevent such a result. Then the mother is obliged to carry in her bosom that most unfortunate of all creatures, an unwelcome child. Her mind filled with chagrin and dread, and perhaps even with hatred of the innocent cause of her troubles, the mother transmits to her offspring the most unhappy traits of character and thus entails upon the little innocent a life of wretchedness and misery. When such mothers find that the means taken to prevent conception have been ineffectual, they often do not hesitate to adopt other means for the purpose of get-

ting rid of the embryo at the earliest possible moment, adding a still more heinous sin to the one already committed. Often enough have we been consulted by women under precisely these circumstances, and beset with importunities to aid them in accomplishing the desired end. But we need not speak further on this point at the present, as it will presently receive ample attention.

A woman who allows herself to indulge in the practices referred to, soon loses all respect for the sacredness of the maternal function, and suffers not only physical but mental and moral injury more than can be estimated. By means of these subterfuges, the sexual act becomes in no way better than self-abuse, and the results are practically the same as of that hideous vice, in both parties.

Criminal Abortion.—The practice of abortion is one of the most revolting crimes which has ever become prevalent in any country at any period of the world's history. The pages of history are stained with the records of this most despicable of crimes. The records of the civil laws of ancient nations show that this crime has been prevalent in all ages and among all nations. At some periods it has been even more prevalent than it is at the present. Strange as it may appear, there have in ancient times been found philosophers and great teachers, some of whom are respected even at the present day, who have justified this crime and recommended it as a means of limiting the growth of population. Aristotle not only did this, but even went so far as to insist that it was the duty of the State to enact laws enforcing the practice

of abortion when the population had reached a certain state. The ancient Grecians and Romans had no law against this crime. Numerous historians represent the practice as almost universal in ancient times. History records that a niece of one of the Roman Emperors died in consequence of having committed the crime in obedience to the command of the emperor. The crime seems to have been looked upon by a large part of those nations who were guilty of it in ancient times very much as excesses in eating are regarded by the majority of persons at the present day, undoubtedly wrong, but so slightly criminal as to be easily condoned, and scarcely to be censured.

In modern times there have not been wanting apologists for this horrible crime ; but on the whole it may be safely asserted that there is less tolerance for ante-natal murder at the present day than at any previous period of the world's history, so far as there is any record bearing on the subject. We do not attribute this improvement to any special increase in the moral sense of the people, but to the greater enlightenment which has resulted from the free discussion of the subject and the diffusion of knowledge respecting the wickedness of the act and the dangers to life and health attending it. It is only with the hope that we may be able to further the work of reform in this direction that we mention the revolting subject in these pages.

The prevalence of this crime even in this enlightened country, and that after all which has been said upon it by physicians and priests and clergymen, undoubtedly far surpasses the conception of any but

those who have an opportunity for knowing the facts or an approximation to the truth. The crime is almost always a secret one, and hence no exact data respecting its prevalence can be obtained; but sufficient is known to indicate clearly that it is on the increase rather than otherwise, and to cause those who are interested in the welfare of the race to tremble at the future prospect.

It has become a notorious fact that the families of native Americans are getting to be so small on the average that the children hardly replace the parents. It has been stated on good authority that the increase of population is almost entirely due to immigration and the numerous families of the natives of foreign countries. In New England where families of eight and nine were formerly exceedingly common, it is now stated that the average number of persons to a family is scarcely more than three among the native born population. At this rate, it is evident that this monstrous vice threatens to exterminate the race if nothing is done to check its ravages. It is certainly high time that the public were thoroughly enlightened on the subject and a general and organized effort instituted against this enemy of the race which, to use the words of another employed in speaking of another vice, annually destroys more human beings than "war, pestilence, and famine combined."

Since the war by which the slaves of the South were liberated, the same appalling vice has become prevalent among them. With this exception, however, the crime is chiefly confined to the middle and higher classes of society. Professional abortionists who are,

it is sad to know, too often women, ply their criminal trade in every large city of the land, and in almost every little hamlet as well. The newspapers still contain numerous advertisements which the initiated well understand. For almost any sum from \$500 down to the paltry sum of \$10 these fiends in human shape, the thugs of civilized lands, are ready at any time to undertake the destruction of a human being without the slightest compunction of conscience and with little danger of detection, so imperfect are the laws relating to the crime and so difficult the task of obtaining evidence sufficient to convict the criminal. The fact that jurymen as well as judges and attorneys are not infrequently indebted to the criminal for similar services, also has an important bearing on the results of the case in numerous instances. The impossibility of obtaining a conviction for the crime of abortion, no matter what may be the character of the evidence, is so notorious that persons who are well known as professional abortionists are allowed to ply their horrible trade year after year without being molested.

But the crime is not confined to professionals. Women sometimes become sufficiently skilled in the use of instruments for the purpose to be able to perform the operation upon themselves, and such women do not hesitate to instruct others in the art of destroying their unborn children. Thus the vile contagion spreads from one to another until in some instances a whole neighborhood becomes demoralized. It is not an uncommon thing for women to boast that they know too much to have children. Often these

knowing ones may be seen leading around a solitary little one whose brothers and sisters have been all nipped in the bud by the cruel abortionist, or by the mother's own hand. Some little time ago a physician of intelligence who had observed somewhat closely, reported that in his neighborhood of several hundred families, there had been scarcely a child born in three or four years.

Every physician who has been a year in practice will testify that he has had already from one to twenty applications from women to aid them in accomplishing the murder of their helpless offspring. The majority of these cases are of married women whose only excuse is that they do not wish to endure the inconvenience and trouble of pregnancy and childbirth, or that they "do not want to have children," or that they "have children enough," or some other equally frivolous excuse. Often have we had women urge these and even more trifling arguments to induce us to comply with their request to assist them to secure an abortion.

Our first experience of this kind opened up to us a new phase of human nature. We had previously supposed that the reason why the crime was so prevalent was the ignorance of women with reference to its criminality and the possible, even probable, consequences to themselves. We felt no doubt that to set before a woman the matter in its true light, would be sufficient to turn her from her purpose, and to institute a reform in that particular case at least. Nothing could have surprised us more than to see our explanations and appeals received with the most un-

flinching coldness, and not allowed to have the least apparent weight in turning the woman from her purpose. No matter how great the crime nor how imminent the risk, she was willing and anxious to take the responsibility, and did not hesitate to state the fact, and to still persist in importuning us to assist her. She seemed lost to all sense of moral obligation, and was ready to do anything or to sacrifice anything to enable her to accomplish her object. So absorbed does a woman, intent on the commission of this crime, become in the accomplishment of her object, the most touching appeals are usually wholly unavailing.

Some years ago a gentleman called at our private office, and after considerable preliminary explanation stated the fact that his wife was desirous of placing herself under our care as a patient for the purpose of securing the production of an abortion, it having occurred to her that the superior advantages afforded for treatment would enable her to escape the more surely from the dangers which she well knew to accompany the crime. We promptly gave him a negative answer and did not hesitate to supplement our refusal by a pretty full expression of our opinion of the operation both from a professional and a moral stand-point. He seemed really touched by our representations of the immorality of the act, and promised to return to his home in a neighboring city and induce his wife to visit us in the hope that she might be persuaded to look at the crime in its true light. We heard nothing more of the matter for several weeks, and the circumstance had almost passed from our mind when we were informed one day that a lady

was waiting for us in the office, and on receiving her card, recognized her as the lady in question, whom we had been expecting. She at once stated her errand, saying that her husband had told her what we had said to him, but that she had come hoping nevertheless that she might be able to induce us to perform the operation for her, as she had no thought of giving it up, and should certainly employ some one else if we did not consent to do it. We promptly assured her that if the operation was performed at all, it must be done by some one else besides us, and at once began to lay before her some considerations calculated to divert her mind from her purpose. Our most earnest arguments and appeals seemed to have no weight with her, however, and at last we said to her, "Madam, you have had children before?" "Yes," she replied, "I have two beautiful children, aged three and five years." "Very well; you say that you do not feel capable of caring for and rearing more than two children, and assign this as a reason why you are so anxious to destroy the child now developing within you. You are even willing not only to destroy the coming little one, but to incur the risk of losing your own life as well, or in all probability of becoming an invalid for life at least, to say nothing of the destruction of your peace of mind. Now I can suggest for your consideration a much more rational plan, one which will accomplish the same result, and which will be attended with little if any physical danger to yourself, and will be in no degree more criminal." She was eager to hear the plan I had to suggest, and expressed herself as very ready to adopt

it if it would, as I said, accomplish the same result. We accordingly presented it to her as follows :—

“Since your chief reason for wishing to destroy your unborn child is your inability to care for more than the two children which you already have, a much better plan than that which you propose would be to take the life of one of the children already born, and thus save yourself the danger of an operation which is almost as likely to destroy your own life as that of your child. You could easily drop the little one into the river on some dark night, or could cut its throat or smother it, with little fear of detection, as no one would suspect you of such a crime, and then you could allow the present pregnancy to go on to full maturity and have no more children than you now have. The crime would be in no sense a greater one, and would not be so great in one sense, since if an abortion is produced, the result may virtually be suicide as well as murder. So far as the child is concerned, it is murder in either case, and of the most cowardly kind, since it is taking advantage of the weakness and helplessness of a human being unable to defend itself, an act which is seldom equaled in atrocity by the most heartless assassin or even the barbarian captor.”

She weakened for a few moments, and we felt that possibly we might succeed in rescuing her from the commission of the crime which she had meditated; but it was only for a moment that she hesitated; she then rose and withdrew from our office with the assertion that if we would not do the operation she must find some one who would.

It would seem that such a view of the matter, so

manifestly true and unanswerable as an argument, would arouse the conscience of any woman in whom still glowed a single spark of the instinct of motherhood; but unfortunately this is by no means the case. Too often the mind is so determinedly set upon the commission of the crime that even the thunders of Sinai would scarcely turn it from its purpose. Many times have we earnestly labored for hours with women who have applied to us for the performance of an operation or for medicine by which the same end might be accomplished, without other result than a very weak promise to consider the matter further; and we knew too well that the consideration would all be in the opposite direction from what it should be. When a woman has so far smothered her womanly instincts as to wish to deliberately and in cold blood murder her innocent, unborn babe, even at an early period of its existence, she becomes desperate, and sometimes desperately wicked. Conscience seems to be asleep and the moral instincts benumbed.

Sometimes, however, we have been glad to know that the results of our efforts have been otherwise. Often, as we pass along the street, we meet a little fair-haired boy who does not know how narrowly his mother escaped the commission of the awful crime of murder, nor how earnestly we pleaded for his life when he was a helpless, yet undeveloped, and, unfortunately, unwelcome child. Would to God that we could place before the mind of every woman in the land a picture of the evils of this awful crime, the sacrilege, the profanity, the worse than brutish cruelty of this crime against God, against the race, against

nature, and against the perpetrator, a picture so vivid in coloring, so horrifying in its hideousness, that it would make an impression ineffaceable by any of the selfish and frivolous considerations usually urged as reasons justifying the act.

Statistics and the experience of every physician of long practice show that abortion is many times more dangerous to the life of the mother under ordinary circumstances than pregnancy. The majority of those who are guilty of this crime, become invalids for life.

Criminal abortion is the cause to which thousands of women may trace a long line of ailments of a most obstinate and aggravating character. Many such cases have come under our care, and no class of diseases are so obstinate and often utterly intractable as this. After normal childbirth, the uterus and its appendages naturally undergo a change known as involution, by which the organ is rapidly restored to its natural and ordinary size and condition. After abortion, this change is very likely to be incomplete, leaving the uterus congested, enlarged, sensitive, and in a condition to invite the most serious disease. This is true even in the most favorable cases. Often the immediate results, as well as the more remote, are much more serious. Abortion is very likely to be followed by inflammations of various sorts, especially of the uterus, ovaries, and surrounding tissues, which if not immediately fatal, leave behind them results which render the woman a life-long sufferer, and frequently develop in later years into some form of malignant disease. This is undoubtedly one of the most prolific

causes of the increasing frequency of this most appalling and incurable of all human maladies, cancer.

One of the most frequent complications of abortion, and one which rarely occurs in natural childbirth, is blood poisoning from retention and decomposition of the placenta and membranes of the foetus. At the end of normal pregnancy, nature prepares the way for the prompt separation of these attachments of the foetus, and thus obviates this danger; but in cases of abortion there has been no such preparation; indeed, the placenta is at this time becoming more and more firmly attached to the walls of the uterus, and consequently is likely to be retained to undergo gradual decomposition, thus involving the liability to blood poisoning, which will ruin the constitution for life if it does not at once terminate fatally.

Physicians alone are to any degree acquainted with the awful extent to which this crime prevails. Even they are not always able to get at the facts. Women who will commit this crime will resort to any means to conceal it from those whom they know regard it as such. Not long ago, on making an examination of a young unmarried woman, we were surprised to find a large tear of the neck of the womb which we could not doubt had been produced in this way, though she professed to know of nothing except a fall to which to attribute it.

A married woman who came under our care a few years ago for treatment for a uterine disease, stated that she had never borne a child, and adhered to the statement, although an examination disclosed a large tear in the neck of the womb which could not have

been in any other way. Our confidence in the integrity of the patient for a time led us to think that the morbid condition might possibly be the result of the removal of a morbid growth from the uterus which she asserted had been done at a previous time; but we afterward learned that our first opinion was correct, the occasion for the tear having been a lapse from virtue when a girl,—a circumstance which had all her life been held a secret.

The most horrible results often follow attempts at the performance of this crime which are unsuccessful. The instruments used frequently mutilate the innocent being against whose life these cruel efforts are directed, in a most terrible manner without accomplishing the desired result, so that the termination of the pregnancy often reveals a beautiful babe with a limb torn from its body, or frightfully disfigured in other ways, or a monster so deformed as to be scarcely recognizable as ever having had anything of a human shape. Cases have even occurred in which the head has actually been torn from the body without causing abortion or even preventing development of the remainder of the body. Nature sometimes endures all this violence rather than surrender her trust before the proper time for so doing; and every woman who subjects herself to an operation for the purpose of inducing abortion incurs the risk of becoming the unwilling mother of an eyeless or crippled child, or a headless monster.

Recent investigations have shown that there is still another result of criminal abortion which has been heretofore overlooked. Careful observations

have developed the fact that the subsequent pregnancies are affected by an induced abortion not only as regards the liability to miscarriage, which is well known, but as regards the development of the foetus. Thousands of mothers have found that when they had repented of their criminal attempts to thwart the purposes of nature, and really desired children, the womb had either undergone such changes that pregnancy was impossible, or if it occurred, could not proceed to full development; or that if the development did continue to full term, the result was only a weak, puny creature, badly developed, and certain to be all its life-time a silent witness of the mother's criminal attempts.

This is a matter to be considered by mothers who desire to get rid of their unborn infants simply for their convenience; because they do not want to settle down to sober life just yet, or because they have planned a trip to Europe or a summer at Saratoga. Are you willing, mother, to incur the risk not only of blighting the existence of the little innocent whom nature has furnished you with instincts to protect, and to involve the liability of paying the penalty of your crime with your own life, but also to render almost certain the destruction of the prospects of the little ones who may come to you in future years, should you still be capable of becoming a mother?

One thing women ought to know. A skillful physician cannot be easily deceived as to the cause of an abortion. The symptoms of an abortion occurring spontaneously from ovarian disease, displacement, a fall or other accident, are different from those which

accompany an instrumental abortion, and the difference will be readily detected by a physician of experience.

The time has fully come when there ought to be a general waking up on the part of all lovers of humanity, with reference to this devastating vice. Physicians and clergymen should "cry aloud and spare not." Laws are of no consequence, or at any rate are of little avail, since there are usually but two witnesses to the crime, both of whom are criminals, and both of course desirous of concealing their crimes. The professional abortionist is skilled in the art of concealment and evasion of justice. We have had some experience in attempting to bring these human fiends to justice, but not such as to encourage us in repeating the effort. Though the evidence may be as clear and conclusive as possible, shrewd and unscrupulous lawyers will find some means for befogging the average jury to such an extent as to cause a disagreement if not an out and out acquittal.

The only hope for any better state of things than at present exists is in the education of the people. Women must be educated concerning themselves, and a wholesome respect for the sacredness of the reproductive function must be cultivated. Women must be informed of the perils which they incur in resorting to instrumental or medicinal means for producing abortion. Only a few weeks ago a young woman came to us for examination and treatment for dropsy. Her history disclosed the fact that she had taken a large dose of "tansy tea," as the result of which she sank into collapse and remained unconscious for

many hours, her life being saved only by the greatest exertions. Since that time, she stated, she had been bloating, and had not menstruated. A few questions elicited the fact that the tansy was taken "to bring her around," as she said, menstruation not having occurred at the usual time, and the fear being entertained that she was pregnant. We at once understood the cause of the bloating, and the examination made apparent the correctness of our conclusions. The father soon arrived on the scene and made a most eloquent appeal to us to produce an abortion. We answered him in the usual way, and he was apparently satisfied; but his subsequent course was such as to lead us to suspect very strongly that he was determined not to rest until the desired end was accomplished. This case illustrates the fact that the mother's life may be greatly imperiled without any result so far as the foetus is concerned. All medicinal agents used for this purpose are powerful poisons, and quite as likely to produce the death of the mother as the expulsion of the foetus.

Every woman who commits or attempts to commit this horrible crime, and every husband who encourages it or even assents to its performance, ought to be treated as criminals, and ostracized from society. So long as the act of abortion is looked upon as an offense so trifling as to be easily condoned, and hardly worthy of censure, its frequency will increase. Every pulpit in the land ought to send out in stirring and unmistakable tones, warnings against the gross immorality of this practice, drawing vivid pictures of its cruelty and unnaturalness, and pronouncing anath-

emas upon its perpetrators. The crime should be considered a just cause for church action to disfellowship, and the nature of the crime should not induce those who may have knowledge of it to keep it secret. The crime must be made odious, and the perpetrators condemned in unstinted terms.

Physicians must warn women of the physical as well as the moral calamities which follow in the wake of this inhuman practice, and the certainty of retribution in this life, as well as the next.

Testimony of Eminent Physicians.—The following paragraphs express not only the sentiments of the eminent authorities referred to, but the conclusions and views of all conscientious physicians of experience :—

“ Yet this very thing of criminal abortion means, in plain terms, the most cowardly, base kind of murdering,—cowardly, because upon a helpless, living embryo, to hide the result of sensual gratification, or to evade the duty of caring for it afterward; or simply, with some, because it is thought to be vulgar to have children,—base in a deliberate purpose to sacrifice life, moral purity, maternal nobility and loveliness, to degrading desire.

“ There are those who would fain make light of this crime by attempting to convince themselves and others that a child, while in embryo, has only a sort of vegetative life, not yet endowed with thought, and the ability to maintain an independent existence. If such a monstrous philosophy as this presents any justification for such an act, then the killing of a newly born infant, or of an idiot, may be likewise

justified. The destruction of the life of an unborn human being for the reason that it is small, feeble, and innocently helpless, rather aggravates than palliates the crime. Every act of this kind, with its justification, is obviously akin to that savage philosophy which accounts it a matter of no moment, or rather a duty, to destroy feeble infants, or old, helpless fathers and mothers.

"Perhaps only medical men will credit the assertion that the frequency of this form of destroying human life exceeds all others by at least fifty per cent, and that not more than one in a thousand of the guilty parties receives any punishment by the hand of civil law. But there is a surer mode of punishment for the guilty mother, in the self-executing laws of nature. This, in the majority of instances, is sufficiently severe, far more so than any ever planned and executed by the hand of man. The punishment is often capital, or by death, as every physician has witnessed, and as the newspapers of the day abundantly testify. When not so, there is usually a life-long retribution in store for the offender, with an untimely and agonizing mode of death.

"Yearly, thousands of women, wives and mothers, in the higher walks of life, risk, or actually sacrifice, their lives by this unnatural crime,—their most intimate friends uninformed and unsuspecting as to the real cause of their death."

"The great majority of those who submit to this crime drag through life in miserable health, victims to painful irregularities, to slow and obstinate irritations, or to a predisposition of the maltreated parts to take

on disease from the slightest exposure and exertion. Frequently the constitutional shock is so severe that the strength is never fully recovered, the victim presenting a striking and permanent absence of all the marks of health and vigor. Even in some instances in which the transgressor flatters herself that she is uninjured, there is an insidious and terrible disease forming in the generative organs, which only awaits the waning of the general strength and energies to burst forth into torturing and incurable activity. I allude to that fearful disease, cancer of the womb.*

“The tendency to serious and often fatal organic disease, as cancer, is rendered much greater at the so-called turn of life, which has generally, and not without good reason, been considered as especially the critical period of a woman’s existence.”

“Not only is the foetus endangered by the attempt at abortion, and the mother’s health, but the stamp of disease thus impressed is very apt to be perceived upon any children she may subsequently bear. Not only do women become sterile in consequence of a miscarriage, and then, longing for offspring, find themselves permanently incapacitated for conception; but, in other cases, impregnation, or rather the attachment of the ovum to the uterus, being but imperfectly effected, or the mother’s system being so insidiously undermined, the children that are subsequently brought forth are unhealthy, deformed, or diseased. This matter of conception and gestation, after a miscarriage, has of late been made the subject of special

* Black.

study, and there is little doubt that from this, as the primal origin, arises much of the nervous, mental, and organic derangement and deficiency that, occurring in children, cuts short or embitters their lives."

"In thirty-four cases of criminal abortion reported by Tardieu, where the history was known, twenty-two were followed, as a consequence, by death, and only twelve were not."*

Another authority states that of one hundred and sixty cases of instrumental abortion, the death of the mother occurred in sixty.

The Menopause, or Change of Life.—Beginning at about the age of thirteen years, the menstrual function usually continues about thirty-two years, reaching its conclusion, on an average, in the forty-sixth year, but terminating in the majority of women in the fiftieth year. At puberty the ovary enlarges until it attains its full development and begins its work of casting off each month a perfected ovule. When the forty-fifth year of a woman's life is reached, the reverse of this process begins. The ovary begins to shrivel, soon reaching the size and acquiring much the appearance of a peach stone. A few months later it is still more shrunken; and after the cessation of the menses it often becomes so shriveled as to be scarcely recognizable.

At the same time that the ovaries are undergoing this remarkable degenerative change, a similar change is taking place in the other organs of generation. The uterus diminishes in size, as does also the vagina. The mouth of the womb becomes contracted,

* Storer.

and after a time entirely closed. The upper part of the vagina is often contracted to such a degree as to produce folds closely resembling those which result from serious inflammations about the uterus. The breasts also diminish in size. These changes indicate unmistakably the decline of the function of reproduction preparatory to its entire suspension.

As a rule, the capability of procreation ceases with the cessation of menstruation; but this is not uniformly the case. Instances are on record in which pregnancy has occurred before the appearance of menstruation; and so it may also occur after the disappearance of menstruation. This seeming anomaly is due to the fact that ovulation and menstruation are really two distinct acts, although usually coincident.

As before stated, menstruation usually ceases somewhere between forty-five and fifty years; but cases are recorded in which the menopause has occurred at much earlier and much later periods. In one instance which came under our observation a few years ago, the change of life was complete at twenty-eight; and in a case now under our care for treatment for a mental affection, the menopause was delayed to the sixty-first year. Cases are recorded in which the function was continued as late the eightieth year, but there may be some doubt as to the authenticity of these reports.

As at the establishment of the function it is attended with a considerable degree of irregularity, so also at the conclusion. There seems, indeed, to be a remarkable correspondence between the morbid con-

ditions affecting the two termini of a woman's sexual activity. If the function is ushered in with great irregularity, its conclusion will be attended with the same phenomena. Great pain, local or general during menstrual activity, will pretty certainly be followed by the same sort and degree of pain at the grand climacteric. One very singular circumstance is the fact that a late puberty indicates a short rather than a long menstrual life. So also, habitual pain at the menstrual period indicates pretty certainly much pain and suffering at the menopause.

A Critical Period.—This period is one of the most critical epochs of a woman's life. Upon the manner in which she passes through it, depends her future health and happiness in a very great degree. The perturbations in the general system which occur at this time are of a character so profound as to be wholly inexplicable were not the intimate relations of the ovaries with the general system through their nervous connections so thoroughly understood. During the period of menstrual activity, a woman's system is affected, we may almost say, dominated, by the influence of these two little glands in a most remarkable manner. The relation between the ovaries and the digestive functions must be familiar to every one. The nausea which is induced by simply pressing upon the ovaries, especially if they are in the slightest degree irritable, is evidence of the reflex influence which they exert upon other important abdominal organs. Either an excess or a deficiency of the proper influence of these

organs over other parts of the system may be productive of disease, and to an extent even more than is at present well understood.

In view of these facts it is not to be wondered at that the removal of an influence so profound should be accompanied by a greater or less degree of general disturbance. The period during which these disturbances are observable lasts from a few months to several years. The average period from the time when the first irregularities are noticed to the entire cessation of the menstrual flow is about two and one-fifth years.

The degree of disturbance observed during this period is exceedingly variable. Much depends upon the condition of the system when the period is reached. A woman who comes to this critical epoch of her life with a constitution unimpaired by fashionable dressing or dissipation or by excesses of any kind, may hope to pass through it safely and quickly, avoiding the numerous dangers which at this time beset the pathway of her sister who has recklessly ignored the demands of nature and the dictates of reason in respect to the care of her health. A woman who has all her life been feeble, a sufferer from "female weaknesses" of various sorts, will find this period a veritable "Pandora's box" of ills, and may well look forward to it with apprehension and foreboding. It is well, indeed, if being forewarned, she begins in time to correct the various faults of habit and regimen which have a direct or indirect tendency to increase the perils of the approaching crisis. A proper preparation for this eventful period will do more to mitigate

its sufferings and hasten it to a happy termination than all the prescriptions which can be compounded by the most skillful physicians. Hence the attention which we give to this important subject here. In this case as in many others the homely adage, "An ounce of prevention is better than a pound of cure," is peculiarly applicable.

As a rule, the first indication of the approach of the menopause is irregularity of the menstrual flow, either in time or in quantity, or in both. In exceptional cases there is a sudden cessation of the flow, there being no return of the function, even in a slight degree. This should not be considered a cause for alarm, when it does occur, as is likely to be the case on account of the numerous popular superstitions respecting this period. There is no danger to the system in any way from such a sudden suspension of the function, provided opportunity is given for the system to recover its balance by perspiration or otherwise. The most common mode of termination is a gradual diminution of the flow until it ceases altogether. Sometimes a profuse flooding terminates the function, and in other cases a succession of such floodings occur. With some women the flow is alternately scanty and profuse for a few months before it wholly ceases, while with others the quantity is normal but the time either shortened or lengthened or irregular in both ways, until suspension occurs.

Other symptoms besides those immediately connected with the function, almost invariably mark the approach of this epoch and characterize its continuance. There is in almost all cases a decline in health

more or less marked in degree. The strength is diminished, and in many instances there is loss of flesh as well. The appetite is capricious and morbid, as at the beginning of the period of menstrual activity. Various disturbances of the stomach, bowels, bladder, and even kidneys are to be noted. Cutaneous eruptions often occur, particularly a form of *acne* of the face. The patient perhaps complains of symptoms referring to the heart, also the lungs and other vital organs, all of which are found on examination to be of a purely reflex character. The expression of the face often changes in a marked degree; and sometimes there is a marked growth of hair on the chin or upper lip.

But by far the most noticeable symptoms are those which relate to the nervous system. The neuralgias, nervousness, fidgets, and hysterias, which afflict some women at this period are such as to render life wholly undesirable. "Flushings" are among the most constant of the symptoms referable to the nervous system. This is due to the reflex influence of the ovaries upon the *vasomotor* system. A sudden rushing of blood to a part, accompanied by excessive heat and often violent throbbing, renders the patient really wretched by its frequency. Any part of the body may be affected, but the head or face and neck are the favorite seat of the affection. The hands, feet, legs, and trunk of the body may be affected in the same manner. The phenomenon is precisely the same as that of blushing, and indeed this may be said to be a sort of "pathological blushing." This sudden afflux of blood to any part may occur as often as several

times an hour, or may be as infrequent as half a dozen times a day. The paroxysm usually lasts not more than ten minutes, and is succeeded by a profuse perspiration, which relieves the surcharged blood-vessels of their repletion. When the heat is not succeeded by the perspiration, it is familiarly termed "dry flushing," which is much more disagreeable than the other form of the malady, since the surcharged blood-vessels are not emptied of their contents by the exudation of serum.

Sometimes nausea and vomiting accompany the flushing, as does invariably a feeling of weakness and *malaise* to which the patient should yield herself, securing quiet and repose until the equilibrium of the circulation is restored. Sometimes the congestion of the head becomes so intense as to make apoplexy imminent; and, indeed, cases of paralysis have occurred at such a time in a few instances.

Another unpleasant complication of these attacks is the intense mental excitement which often accompanies them, and which sometimes amounts to actual delirium or mania. On account of this tendency, they ought not to be regarded lightly or unworthy of prompt and efficient attention.

Profuse perspirations, sometimes so copious as to saturate the bed-clothing, is also a common symptom of this condition. These may follow a "flushing," or may occur independently. They are most apt to occur during sleep. They follow, also, mental or nervous excitement almost invariably.

Other general symptoms occur with greater or less frequency and prominence, as general debility, chloro-

sis, biliousness, headache, pain in the back and bowels, sick headaches, hemorrhoids or piles, diarrhoea, constipation, dropsy, bloating of the face, swelling of the hands or feet, frequent fainting, irritation and swelling of breasts, neuralgia or rheumatism of joints, leucorrhoea, pain in chest with or without cough, false pregnancy, nettle rash, water brash, incontinence of urine, numbness in limbs, prickling sensation in hands and arms, epilepsy, fits of laughing and crying, irritation of the rectum, vicarious hemorrhages, as from nose, stomach, varicose veins, and even skin, boils near the anus, peeling of nails, falling off of nails, inflammation of the eye and weak vision, toothache, neuralgia of vulva, itching of vulva, inflammation of vagina, sciatica, and unnatural drowsiness.

The great liability to the formation of morbid growths at this time is also a prominent feature of the pathology of the menopause. This applies particularly to polypi and fibroid growths of the uterus. Cancer must also be mentioned as one of the morbid conditions which frequently chooses this as the favorable moment for it to establish itself. If the neck of the womb has been previously torn by childbirth, or if the nutrition of the organ has been impaired by the practice of abortion, the occurrence of cancer at this time is rendered much more probable.

A peculiar form of morbid growth known as "vascular tumor of the urethra" is also likely to make its appearance at this time. We have operated upon a large number of these tumors, and have found by far the greater number in women at or near the meno-

pause, although the affection is by no means confined to this class.

But we have not yet mentioned the most prominent class of symptoms which characterize this important period, viz., those which relate to the mind. The mental symptoms are quite as marked and prominent in most cases as are those which relate to any part of the system. Often there is an entire and most remarkable change in disposition. A kind, patient mother, or forbearing, confiding, exemplary wife, becomes irritable, unreasonable, and suspicious. Her natural modesty may even give place to wantonness in extreme cases, and the mother's instincts may become so thoroughly obliterated as to give place to an almost uncontrollable desire to take the lives of her little ones. The once happy woman becomes despondent, moody, and taciturn. She avoids company, has no taste for amusements, and spends her time in watching her varying symptoms, and bewailing her real and imaginary woes. In many cases, actual insanity, usually of a temporary character, fortunately, is the result of the profound disturbances which the system undergoes at this time.

Although this is but a hasty and imperfect sketch of this critical epoch in a woman's life, we must hasten to consider what may be done to prevent and ameliorate these various morbid conditions.

Hygiene of the Change of Life.—The best way for a woman to prepare for the crisis which we have briefly described, is to live healthfully and physiologically in every particular, as we have described in the foregoing pages of the work. In matters pertaining

to dress, diet, and exercise, it is particularly important that all the laws of health be scrupulously obeyed. If this has been done from early childhood, happy will be the transit through the stormy sea of the climacteric; but if the reverse has been the case, there are dangerous breakers ahead. If there is no time for preparation, the necessary reforms should be at once adopted as the most certain means of avoiding the worst evils, and by the aid of a few practical suggestions, much can be done to redeem the time.

On the appearance of the first indication of the approaching change, the woman should be relieved of all taxing cares, and should be placed under such circumstances as to secure quiet, and mental and physical repose. If she must remain at home, she must be shielded from the thousand and one petty annoyances which creep into the best regulated domestic circles. Induce her to take a liberal allowance of out-of-door exercise daily. Carriage riding is especially to be recommended, as it provides gentle exercise with entertainment. The diet should be amply nourishing and varied, but unstimulating. Nothing is better than the fruits and grains prepared in various simple but palatable ways. Tea and coffee are especially objectionable, as are all forms of alcoholic beverages, together with "bitters" of every description.

A tri-weekly warm bath will be found exceedingly soothing to the irritable nerves. Gentle rubbing administered daily will be of special advantage also; sponging the spine alternately with hot and cold water once or twice a day, ten to twenty minutes at a time, will be found of special service also.

The pain in the back may usually be relieved by means of hot fomentations applied very thoroughly for half an hour once or twice a day. The pain and tenderness often present in the lower part of the bowels may be relieved by the same means applied over the seat of pain. Another very useful measure is the application of heat to the sacrum by means of a hot brick or water-bag and a cold bag over the seat of pain in front. This application may be continued from two to four hours daily with benefit in these cases when quite obstinate.

Another simple measure of great value as a preventive of local inflammations, and a means of controlling a tendency to hemorrhage and removing congestion of the uterus and ovaries, is the vaginal douche, full directions for taking which are given in the appendix. This measure alone used daily or twice a day, is worth more than all the other measures known to the medical profession combined, if thoroughly administered.

Warm sitz baths are also of advantage, and may be recommended for use in most cases.

To relieve the "flushings" of the face and head, no remedy works so promptly as hot sponging of the congested parts and hot and cold applications to the spine. The same principle applies when other parts of the body are affected as well as the head.

For the profuse sweating, hot salt sponging, at a temperature as high as can be borne, is an excellent means of treatment. If not successful, equal parts of alcohol and water may be used instead. Special ailments should receive special treatment, either as di-

rected in the concluding portion of this work, or by a competent physician.

One more question remains to be answered in case the patient is a married lady, the question of the marital relations during this change. There are undoubtedly cases in which the perturbed state of the sexual as well as of the nervous system gives rise to an unnatural excitement of the sexual desires at this epoch, but that such is rarely the case is the uniform testimony of those whose experience qualifies them to testify on the subject. As a rule the appetite for the physical pleasures of the marriage bed are during this time greatly in abeyance, if not wholly extinguished. It is evidently the design of nature to protect the nervous system of the woman from the tempestuous excitements which she is unqualified to endure without damage not only to the system as a whole, but to that portion of the vital economy chiefly involved in the act. There is no doubt but that sexual congress at this time is a very common cause of intensifying all the numerous inconveniences and physical, mental, and nervous ailments which are attendant upon this period, and hence continence is to be not only recommended but enjoined as one of the most essential hygienic measures by which a safe and rapid transit through the turbulent period of sexual decline may be insured.



THE MOTHER.



THE motherly instinct is without doubt the ruling passion in the heart of the true woman. The sexual nature of woman finds expression in this channel when her life is a normal one, rather than in the grosser forms of sexual activity. In modern times there seems to be a tendency to the obliteration of the instinct which makes motherhood desirable and regards it with respect; but every true woman will recognize the demoralizing nature of this unhallowed influence, and will lift her voice in solemn protest against it. In no sphere does woman so well display her Eden-born graces of character so excellently as when fulfilling her duties in nurturing and training for usefulness the plastic minds and forms which have been intrusted to her care. We behold with admiration the canvass of a Raphael or a Michael Angelo; we stand with speechless wonderment before the recovered marble of a Phidias or a Praxiteles; we are almost ready to bend the knee in adoration of the lofty genius which gave birth to these marvelous works of art which have immortalized their creators; but which of all of these can for a moment compare with the work in-

trusted to the mother, the task of molding a mind, of modeling a character, not for time only, but for eternity?

Let the purity and dignity of motherhood be magnified. Let woman be taught that in the performance of her Heaven-intrusted task she is fulfilling a mission so lofty and so sacred that none other can ever approach to it. We do not say that woman should never aspire to any calling outside the province of the domestic circle; but we do most emphatically denounce as false and in the highest degree perverting in its tendency, the notion that the mother's mission is a lowly one, unsuited to the capabilities of a brilliant intellect. Such teaching is in the highest degree mischievous. Any mother may find within the scope of her own family circle ample opportunity for the full employment of the noblest endowments of mind and soul which have ever been bestowed upon a human being.

The Prospective Mother.—The woman who for the first time recognizes the fact that she will in the natural course of events in a few months become a mother, naturally finds her mind occupied with new thoughts and curious questions on a variety of themes which may never have interested her before. If she possesses the true mother's instincts she will earnestly inquire how her own habits of life, her thoughts and actions, may affect the well-being of her developing child. Possibly she may never have heard of the marvelous influence of heredity in molding not only the form but the character of the unborn; but instinct teaches her that her own conditions in some

way affect those of her child, and that for a period she must think, act, and live for another besides herself. One of the most powerful means of impressing indelibly upon the mind the necessity for care and proper training, mental and moral, as well as physical, during the period of pregnancy and lactation, is a presentation of the principles and facts of

HEREDITY.

We have not space here to enter into the details of this somewhat intricate department of biology, and can only call attention to a few of its leading features which are of special practical value in this connection.

"Like father like son," is a homely adage, the correctness of which is rarely questioned; and "like mother like daughter" would be equally true. A careful study of the subject of heredity has established as a scientific fact the principle that sons as a rule most resemble the father, and daughters the mother, although there are often observed marked exceptions to the rule. The degree to which this hereditary tendency exists, and how it may be utilized to the improvement of the race is a question of interest which we may profitably consider. Unfortunately, the question of "pedigree" receives very little attention so far as human beings are concerned. If a man is about to expend a thousand dollars for a fine horse, he inquires with great care into the ancestry of the animal. The owner must be able to show a record of lineal and unmixed descent from parents

of pure stock, or its value will be greatly depreciated in the eyes of the purchaser.

Stock raisers appreciate in the highest degree the fact that "blood" is a thing of market value, and not to be ignored in the slightest degree. In matters which relate to the welfare of their own race, however, eternal as well as temporal, human beings seem to ignore the principles which they so readily recognize in lower species.

A young man seeking a wife, or a young woman considering the eligibility of a young man to become her husband, asks no questions about pedigree. At what age did your father or mother, or grandfather or grandmother die, or of what disease? is a question rarely if ever asked as having any bearing on the subject of marriage. Family tendencies to scrofula, consumption, insanity, epilepsy, or any one of numerous other lines of physical degeneracy, to say nothing of vicious moral and mental tendencies, are never taken into consideration.

Race Deterioration.—In consequence of this neglect of one of the primary conditions of healthy parentage, the race is daily deteriorating in spite of the efforts of sanitarians and health teachers. Sanitary laws respecting the care of cities and of individuals may be ever so thorough and complete, and may be enforced with the most scrupulous rigor, yet the race will continue to degenerate so long as this matter of heredity is neglected; for "blood will tell," whether good or bad, and the great preponderance of "bad blood" is the fatal element at work undermining the constitution of the race and destined

ultimately to destroy it, if some means is not taken to prevent its baneful influence.

We are fully aware that this view of the prospects of the race is a very unpopular one; but considerable study of the subject has convinced us that the conclusion we have drawn is the only correct one. Defects of body and mind, as well as of morals, are growing yearly more abundant. Two persons possessing these defects unite in marriage, and their defects are many times increased in intensity in their children.

A quaint writer in speaking on the subject of heredity and indiscriminate marriage, utters the truth in the following very forcible words:—

“By our too much facility in this kind, in giving way for all to marry that will, too much liberty and indulgence in tolerating all sorts, there is a vast confusion of breed and diseases, no family secure, no man almost free from some grievous infirmity or other, when no choice is had, but still the eldest must marry; . . . or, if rich, be they fools or dizzards, lame or maimed, unable, intemperate, dissolute, exhaust through riot, as it is said, *jure hæreditatis sapere jubentur*, they must be wise and able by inheritance; it comes to pass that our generation is corrupt, we have many weak persons, both in body and mind, many feral diseases raging amongst us, crazed families, *parentes peremptores*; our fathers bad, and we are like to be worse.”*

The stock-breeder modifies the form and mental and nervous qualities of his animals almost at will.

* Burton's Anatomy of Melancholy.

He increases or lessens length of body or legs, and increases or decreases any particular feature of muscular development. Under his manipulations, the common race of horses yields in obedience to his will, the carriage horse or cart horse, the racer or the roadster, each with special qualities and characteristics which enable him to excel in a particular direction.

Interesting Illustrations.—Every breeder knows that not only good traits but disease and vicious tendencies are transmissible. Broken wind, spavin, and numerous other diseases are well-known to be inherited in horses, as also defects, even when accidentally produced. It is asserted that when several generations of horses have been marked with a red-hot iron in the same spot, the colts sometimes acquire the same marking.

The well-known variety of sheep known as the *ancon* originated in a male lamb born of an ordinary sheep, but possessing the peculiarity of a long body, short legs, and crooked fore-legs. These qualities being desirable as they rendered the animal unable to leap fences with the usual facility, the same qualities were produced in others by breeding from the original, and thus a distinct breed of sheep has been produced.

It is undoubtedly in a similar manner that the flies of some of the windy islands of the Pacific Ocean have lost their wings, without which they are much better fitted to meet the gales to which they are almost constantly exposed.

An army officer who had acquired a deformity of the little finger as the result of a gunshot wound,

transmitted the same to his children and thence to his grandchildren.

Acquired habits are often transmitted. This is noticed in a marked degree in the various breeds of dogs. The shepherd dog takes naturally to his task; and the pointer needs scarcely any training to make him proficient in his particular line. That the disposition to use the left hand runs in families is a familiar fact. A curious example is given in which the habit of crossing the legs in a peculiar manner during sleep was transmitted through two generations.

A remarkable example of heredity appears in the case of the Lambert family. More than a century and a half ago a boy of fourteen appeared before the Royal Society of England, possessing a peculiarity which attached to him the appellation of the "Porcupine Man," consisting of a thick covering of horny scales or bristles which gave to his integument the appearance of that of a hedgehog with its quills trimmed to about an inch in length. This peculiarity, accidentally acquired through some abnormality of the developmental process, was transmitted to his sons and grandsons. The narrator remarks concerning this curious freak of nature, "It appears, therefore, past all doubt, that a race of people may be propagated by this man having such rugged coats or coverings as himself; and if this should ever happen, and the accidental original be forgotten, it is not improbable they might be deemed a different species of mankind."

Dr. Brown-Sequard, an eminent French physiologist, has succeeded in inducing epilepsy in guinea-pigs,

and has observed that even when thus artificially induced, the disease is transmitted to the young of the diseased animals.

It has also been observed that the conditions resulting from overwork or ill usage of an animal are readily transmitted to the young.

Mr. Francis Galton, who has probably made the most careful study of the hereditary influences which produce men of genius, tells us that nearly all men of great talent, jurists, statesmen, commanders, artists, scientists, poets, and clergymen, have had parents of marked ability. Of the two parents, the father has the precedence in the proportion of seven to three; but this is no greater difference in favor of the male than would naturally result from the superior advantages afforded men for the development of genius.

One curious fact is that eminent divines seem to inherit their ability from their mothers much more frequently than their fathers, the proportion being nearly three to one in favor of mothers, from which he concludes that mothers transmit piety to their children in a larger measure than fathers.

If true, this certainly speaks well for the piety of women; but we question the correctness of the conclusion, for we are by no means certain that the qualities which contribute the most largely to the eminence of distinguished divines are not other than those which constitute piety. Learning, eloquence, and other traits which make men famous in other callings are more often the chief factors.

The difference in the aptitude for acquiring knowledge, which is very apparent between the negro and

the Caucasian races, is almost equally marked when the children of the ignorant and the cultivated classes of the white race are compared. In both cases the influence of heredity is apparent.

That moral as well as mental qualities are transmitted from parent to child is also evident from the observation of what are known as the criminal classes, in whom the hereditary tendency to crime is so apparent that in England, institutions have been organized to provide for the care of the children of criminals in the hope that by correct early training something may be done toward reclaiming them.

The habit or vice of the parent becomes in the child an almost irresistible tendency. This is apparent in the children of drunkards, thieves, libertines, and prostitutes, and we do not doubt that further investigation and careful study of the subject will show that the tobacco, opium, chloral, and other similar habits, and possibly also the excessive use by parents of tea and coffee and of stimulating condiments, stamp the progeny with vicious tendencies which either lead directly to the formation of similar habits or worse ones, or establish diseased conditions which sooner or later develop into serious or even fatal maladies.

No better illustration of the fact of the inheritance of a tendency to vice could be asked than is afforded by the notorious Juke family of New York. From five unchaste sisters have sprung a family of 1200 persons, nearly all of whom, at least of those living, are the occupants of jails, work-houses, poor-houses, or houses of bad repute. Nearly half are known to

be contaminated with the foulest of all diseases to which human beings are subject.

The hereditary tendency to vice and crime is one which deserves more attention than it now receives from our law-makers and administrators as well as from parents. It is really impossible to justly estimate the degree of an individual's guilt without knowing something of his hereditary tendencies. We do not propose that persons with hereditary tendencies to theft and other crimes shall be excused on that account, but rather that they should be punished in a different manner from other criminals.

The Chinese are certainly a hundred years ahead of us in their administration of justice, at least in this particular. In that country, careful inquiry is made in each case as to the family history of the prisoner and the possible hereditary tendencies which he may have received from his parents.

Very recently an example of hereditary influence in a bad direction has been exhibited before the whole country in the person of the assassin, Guiteau. According to the testimony given in this case, the prisoner's mother was wholly unreconciled to her condition during pregnancy previous to his birth, and resorted to every possible means of producing an abortion by means of drugs. He came into the world an "unwelcome child," his body weakened by the violence done it, his nervous system depraved by the excited and turbulent condition of his mother during his development, and his mind stamped with the reckless disregard for human life felt by his mother in her unsuccessful attempts to destroy her helpless, unborn

babe. Are there not thousands of just such unbalanced and erratic minds whose bias toward evil has been obtained in the same manner? What would be the children of such a father as Guiteau? Are there not thousands of just such little ones growing up in the heart of every large city at this very moment? Is it any marvel that our prisons and insane asylums are full to overflowing?

The poets Coleridge, father and son, illustrate this same principle. The father was an opium-eater, and as a result of yielding to the fascination of the habit, he was reduced to such a state that he said of himself that not only in reference to his habit but in all the relations of life his will was utterly powerless. His son inherited his father's propensities and weakness of will. His favorite poison was alcohol, however, instead of opium. The following is his brother's description of him: "A certain infirmity of will had already shown itself. His sensibility was intense, and he had not wherewithal to control it. He could not open a letter without trembling. He shrank from mental pain; he was beyond measure impatient of constraint. . . . He yielded, *as it were unconsciously*, to slight temptations,—slight in themselves, and slight to him, *as if swayed by a mechanical impulse apart from his own volition*. It looked like an organic defect, a congenital imperfection."

He well understood his condition, as is evidenced by the following reference to himself which occurs in one of his works:—

"Oh! woful impotence of weak resolve,
Recorded rashly to the writer's shame,

Days pass away, and time's large orbs revolve,
And every day beholds me still the same,
Till oft-neglected purpose loses aim,
And hope becomes a flat, unheeded lie."

The senior Coleridge, as well as the younger, was well aware of his weakness, and kept himself constantly under the care of an attendant to prevent him from yielding to his propensities.

One of the most talented of modern essayists* has looked deeply into this subject and thus coined his thoughts into words:—

"It is very singular, that we recognize all the bodily defects that unfit a man for military service, and all the intellectual ones that limit his range of thought; but always talk at him as though all his moral powers were perfect. . . . Some persons talk about the human will as if it stood on a high lookout, with plenty of light, and elbow-room reaching to the horizon. Doctors are constantly noticing how it is tied up and darkened by inferior organization, by disease, and all sorts of crowding interferences; until they get to look upon Hottentots and Indians,—and a good many of their own race, too,—as a kind of self-conscious blood-clocks, with very limited power of self-determination; and they find it as hard to hold a child accountable in any moral point of view for inherited bad temper, or tendency to drunkenness, as they would to blame him for inheriting gout or asthma."

Notwithstanding these facts, we must still maintain that man is morally responsible for his acts, al-

* Holmes.

though in somewhat less degree than has been in generations past supposed. The light thrown upon the subject of heredity by modern scientific researches explains the divine mandate, "The sins of the fathers shall be visited upon the children unto the third and fourth generations."

All of these facts are of practical interest as showing the mother how she may determine something of the character to expect in her children, and knowing beforehand what their deficiencies and morbid tendencies may be, will be prepared to meet them in such a manner as to correct them so far as may be by proper training during the period when the mind is plastic and impressible. But there is a still more valuable lesson to be learned from heredity, one which ought to be indelibly fixed in the mind of every woman who may possibly become a mother; viz., the fact that during the period of gestation, or pregnancy, the mental and bodily states of the mother affect those of the embryonic being to whom she is destined in due time to give birth. This position has been disputed, but the accumulated evidences have become too strong to allow of room for doubt. The following are a few illustrations out of many which we might cite:—

According to Carpenter, in his large and excellent work on physiology, a state of anxiety long maintained during pregnancy has a tendency to produce idiocy in the children. He cites in support of this idea the fact that out of ninety-two births which occurred in the district of London, France, within a few months after the siege of 1793, during which a terri-

ble cannonading was kept up for days and the arsenal was blown up, sixteen died at birth, thirty-three died before the expiration of the first year, eight were idiots and died before they were five years of age, two were found at birth to have numerous fractures of the limbs, making nearly two-thirds of the entire number lost to the world through the unhappy mental influence of a continual state of alarm on the part of the mother.

James I. was a monarch noted for his cowardice. Emotions of fear would sometimes seize upon him so that he would shudder at the mere sight of a sword. This was not a trait of his immediate ancestors, and can only be accounted for by the fact that his mother, Queen Mary, of Scotland, was terrorized by the assassination in her presence of David Rizzio, shortly before the birth of James.

Napoleon was a character in striking contrast with the monarch just mentioned. Before his birth his mother was accustomed to warlike scenes,* accompanying her husband on military expeditions, and sharing with him the scenes of civil war; not in a state of alarm, but of firmness and bravery.

Another author† quotes the case of a woman who was during her pregnancies always afflicted with a mania for theft, the result of which was that she transmitted the propensity to all her children.

Numerous other cases might be cited, did space permit; but sufficient has been said to show clearly

* Life of Napoleon Bonaparte, by Sir Walter Scott.

† M. Lucas.

that ante-natal influence upon the mother is a powerful factor in determining the character of offspring.

Influences operating upon the father, and perhaps also upon the mother at the time of impregnation, have also an important bearing on the character of offspring. This fact was recognized by the ancients, who attributed to influences of this character greater importance than the facts will support.

Combe gives an account of a case reported by a physician of the Isle of Man as follows: "A man's first child was of sound mind; afterwards he had a fall from his horse, by which his head was much injured. His next two children proved to be both idiots. After this he was trepanned, and had other children, and they turned out to be of sound mind."

One more fact should be mentioned in this connection. It has been observed that the young of animals who are immature in years or development are small and dwarfed, and incapable of perfect development. Lambs, goats, calves, and colts born of young parents, remain undeveloped, weak, lymphatic, and incapable of performing their full functions. The same is true of the stag. It has been noticed that the young of such animals do not reach maturity so soon as those born of older parents.

It is asserted by Aristotle that in those cities of Greece where it was the custom for young people to marry early, before complete maturity, the children were of small stature and puny.

An eminent French authority* observed the same thing in his native country where the fear of con-

* Montesquieu.

scription induced many young persons to marry before the proper age. He states that although the unions were fruitful, the children were small, wretched, and unhealthy. Another authority, M. Lucas, states that the same thing occurred in France in 1812 and 1813.

If the race is ever to be redeemed from the present state of physical degeneracy into which it has fallen, it must be by means of attention to the laws of heredity. By this means only can diseased tendencies be successfully combated. Without the aid of this powerful redeeming agency, all other means will be unavailing. The keeping alive of weak and physically depraved individuals, thus allowing them to marry and impress their own weakness and morbid tendencies upon the race, directly contributes to the furtherance of race deterioration rather than the reverse. This is one of the most interesting and important of the numerous problems to be grappled with by students of social science. How can the laws of heredity be applied to the human species in such a manner as to make them of practical value to the race? Men ought to be born into the world with a bias toward good instead of evil, "weighted" toward health instead of toward disease. We do not look for the dawn of the Utopian day when such will be the case, in the present generation at least; but every mother ought to study and ponder the subject with the greatest care and thoughtfulness, and seek so far as possible to make a practical application of these principles in the rearing of her children.

GESTATION, OR PREGNANCY.

Signs of Pregnancy.—The cessation of the menses is usually the first indication that conception has taken place and that the period of gestation has begun. As remarked in a previous portion of the work, however, some women seem to have certain symptoms indicative of the occurrence of conception, such as slight faintness, or some nervous symptom peculiar to the individual. These cases must be regarded, however, as quite exceptional. When the menstrual function is interrupted without the occurrence of anything to which it may be fairly attributed, as taking cold, or some serious general or local disease, a married woman who has been exposed to the liability of conception may consider that she has good grounds for suspecting that she has become pregnant. It should be borne in mind, however, that pregnancy sometimes occurs without interrupting the menstrual function, at least during the first months. Cases are also on record in which pregnancy has occurred without the menstrual function ever having made its appearance, and after the change of life had occurred, the menstrual discharge having been absent for months.

“*Morning Sickness*,” is a symptom which makes its appearance very early in the period of pregnancy, usually in the second month, and often in the first week, continuing six or eight weeks. There is nausea and sometimes vomiting, the symptom usually occurring just after rising in the morning, whence its

name. This form of vomiting is due to sympathetic influences, and while generally not so serious but that it may be easily controlled by the simple means which will be hereafter described, sometimes becomes so violent and uncontrollable as to endanger not only the life of the foetus but of the mother. Many women do not suffer at all with this symptom.

One of the most constant and important signs of pregnancy is the change which takes place in the breasts. At the middle or end of the second month the mammary glands begin to enlarge, become firmer to the touch and somewhat sensitive, and other marked changes occur in the nipple and adjacent tissue. Its color becomes darker, and the dark ring about it, known as the *areola*, acquires a considerable increase in color, becomes somewhat enlarged, and presents on its surface many little tubercles, formed by the enlargement of the peculiar glands which are found in this locality, each of which is in fact a miniature breast in its structure, and hence ready to take on the same development as the gland itself when influenced by the same exciting cause.

In many cases, dark spots appear at this period upon the face and hands or other parts of the body, which closely resemble liver spots, but are distinguished from them by the fact that they speedily disappear after childbirth.

By the end of the second month the womb has acquired a considerable increase in size, in consequence of which it settles down in the pelvis, giving to the abdomen an unnatural flatness characteristic of this condition.

Between the third and fourth months the foetus reaches a degree of development sufficient to enable an acute observer to hear distinctly the beating of the heart. Observations respecting the foetal heart-beat and the means for detecting it have been made at page 98, and need not be repeated here. This is a certain sign of pregnancy.

"*Quickening*" is the term applied to the first movements of the child which are observed by the mother. The term originated in an age of ignorance when it was supposed that at the time motion was first felt, a change took place in the development of the child by which it acquired individual life, which it did not possess prior to that time. The fallacy of this theory has been already shown in this work. It is necessary only to say that motions are made by the foetus at a very early period; but as the uterus does not become sufficiently enlarged to bring its walls in contact with the abdominal walls until the fourth or fifth month, the mother does not observe them until this period.

The movements are described as resembling the fluttering of a bird, or strong pulsation. They may be easily observed by others besides the mother by placing the hand upon the abdomen for a few moments. If they do not occur promptly, a slight tap of the fingers will occasion them, or dipping the hand in cold water before placing it upon the abdomen. Sometimes these movements are imitated either purposely or as the result of disease; when this is the case, the fact may be discovered by observing that the means just given for exciting them does not succeed.

Sometimes women who greatly desire children mistake the movements of the intestines occasioned by flatus or indigestion for those of a foetus. These imitations of foetal movements are so rare, however, that this may be considered an almost positive symptom of pregnancy.

By the time the foetal movements begin to be felt, the uterus has increased in size to such a degree that there is a very considerable increase in size of the abdomen. This symptom must not be relied upon, however, as constituting a reliable sign of pregnancy, as there are so many causes which occasion abdominal enlargements, particularly dropsy and flatulence of the bowels, both of which conditions have often been mistaken for pregnancy. The enlargement of pregnancy is somewhat peculiar, however, being greater at the center than the sides, as a rule, and frequently appearing greatest on the right side. Ovarian tumors have been mistaken for pregnancy, and the reverse.

A case of the latter kind came under our observation some time ago. We were called to see a lady who was said to have a tumor, the enlargement of the abdomen having been pronounced by several physicians to be an ovarian or uterine tumor which should be removed. A subscription had been raised by the friends to pay the expenses of the patient to a large city hospital for the purpose of having the operation performed. She expected to start for her destination in a day or two. On examination we found the usual appearances of pregnancy, although the woman denied having had any of the usual symptoms, and of course advised a postponement of the intended jour-

ney. A few days later, other medical advice was called, and the physicians present were so completely deceived that they resorted to the use of a "sound," as the result of which the woman was in a few hours obliged to send for a physician who delivered her of a nearly developed child.

Several cases have occurred in which operations have been begun for what was supposed to be uterine or ovarian tumors. In nearly all of these cases the surgeon has been led astray by the representations of the patient. It is important that women should become thoroughly instructed on this subject, so as to be able to give an intelligent account of their symptoms and conditions, and to observe more accurately, thus themselves avoiding deception.

Near the termination of pregnancy the uterus becomes so greatly enlarged that it presses seriously upon the stomach and occasions a return of the nausea and vomiting.

A few weeks before the conclusion of gestation, the turgid condition of the blood-vessels of the vagina gives rise to leucorrhœa.

At the very termination of pregnancy, or just previous to the final act of parturition, the uterus again settles down in the pelvis and rapidly undergoes preparation for the process by which its contents are expelled.

During the period of gestation the uterus increases to more than twenty times its natural size, and becomes capable of holding more than five hundred times its normal quantity.

The size of the embryo and foetus at different

stages, and of the child at birth, have been fully described elsewhere in this work. (See page 100.)

HYGIENE OF PREGNANCY.

During the period of gestation the mother has the responsibility of another life besides her own; and it should be known and understood by every mother that by her own acts during this time not only her own health is affected, but the physical, mental, and even moral well-being of her child.

Sufficient reference has already been made to the way in which hereditary and ante-natal influences may affect the unborn infant, and we shall not recapitulate here, but wish to point out some of the ways in which a mother may so relate herself to the laws of nature as to secure to her offspring the highest possible realization of the ideal worshiped by the ancient Greeks, "A sound mind in a sound body."

The condition of pregnancy is in many respects a critical one. This is true of this period in all species of animals, but especially with human females, owing to certain peculiarities of structure to which we have elsewhere called attention. The necessity for special care at this time has prompted nearly all nations to surround their females, when pregnant, with special safe-guards from violence and injuries. The laws of ancient nations, as well as the usages, even at the present day, of barbarous tribes, make apparent the fact that the state of pregnancy has always been regarded by the race as one to be held sacred from invasion.

We will first call attention to measures of regimen and treatment which conduce to the comfort and safety of the mother during gestation and while passing through the process of childbirth, by the aid of which the pains of parturition and the perils of maternity may be avoided. Thousands of women look forward to the termination of pregnancy with constant dread and most dismal forebodings; and thousands of others adopt every possible device to avoid pregnancy through fear of the pains and dangers which are commonly attributed to these physiological processes. We hope to offer in these pages suggestions which will afford to such wives assurance of safety and so great a mitigation of suffering as will lead them to choose the slight inconveniencies of normal pregnancy and physiological childbirth rather than the dismal comfort of a childless old age and the increased liability to disease which is likely to result from a childless life.

Parturition without Pain.—For ages woman-kind has submitted, not always uncomplainingly, it is true, but with evident hopelessness of any redemption, to the pains and perils of maternity, fully believing that their sufferings were the result of the curse pronounced upon womankind in consequence of the transgression of their first mother, Eve. Doubtless woman must endure some burdens and sufferings to the end of time in obedience to the divine mandate, "In sorrow thou shalt bring forth children;" but we are prepared to show that the greater part of woman's sufferings in the performance of this the highest of all physical functions is the result, not of

the curse of Jehovah, but of Dame Fashion. The perverting and deteriorating influences of civilization and fashion have entailed upon woman an amount of sorrow and suffering many fold greater than that which legitimately results from the penalty of the first woman's transgression.

We are aware that some people whose moral instincts are perverted, will exclaim in holy horror against such a doctrine as this, and will even go so far as to object to the employment of any means for the purpose of obviating or mitigating the pains and dangers of childbirth on the ground that in so doing we are attempting to thwart the purposes of the Almighty.

There have been prominent divines who have placed themselves in the attitude of objectors on this ground; but we shall not be deterred by the absurd arguments of these over-scrupulous persons from presenting to our readers every known means by which the discomforts and sufferings attendant upon the function of maternity may be mitigated, and so far as possible altogether obviated.

Diet.—The kind of food eaten has an important bearing on the ease and safety with which the functions of childbirth may be performed, as well as the proper development of the child. All rich and indigestible food should be avoided. The diet should be simple, consisting chiefly of fruits, nut products, and grains. Copious water-drinking, especially taking a glass or two of hot water an hour or two before each meal, is a most excellent means of guarding against disease of the kidneys,—one of the most serious

complications of pregnancy, as well as being an excellent remedy for indigestion, particularly acid dyspepsia, so very common among pregnant women. Oatmeal, cracked wheat, graham flour, and the whole-grain preparations generally, are to be recommended as the very best means of preventing constipation,—one of the most common morbid conditions of the pregnant state. These foods also afford to the system of the mother the very best kind of nourishment, providing an adequate supply of salts for the bones, nitrogenous material for the nerves and muscles, and fat-producing elements to give the roundness and plumpness of form which is characteristic of this condition. The practice of many mothers of living upon tidbits of various kinds during this period cannot be too strongly condemned. Good, wholesome food is needed, in abundance and sufficient variety, not only to sustain the mother, but to afford a proper amount of nourishment of the right kind to the child. Fine-flour bread, rich sauces, pastry, cheese, pickles, confectionery, and everything of like character should be avoided. Not more than three meals a day should be taken, and these should be at regular hours. For most persons two meals are better than three.

The use of flesh food during the period of gestation is also to be condemned as harmful. The stimulating character of such diet has an injurious influence upon the nervous system, and, in addition, its highly nitrogenous character increases the liability to acute inflammation of the kidneys, a most serious affection which is liable to make its appearance near the termination of pregnancy.

The use of tea and coffee is justly condemned by the wise physician, especially during pregnancy, as the abdominal nervous irritability present at this time is very easily increased by any morbid agent of a stimulating character. They are also serious impediments to digestion, and their use increases the tendency to "morning sickness," one of the unpleasant and sometimes most serious complications of pregnancy.

The same is to be said still more emphatically of beer, ale, wine, and spirituous liquors of ever description. The idea that the woman needs something of a stimulating character to "keep her up," is a serious error. Nothing of this sort can be used without positive detriment to both mother and child. The only thing needed to sustain the prospective mother and prepare her for the ordeal before her, is good healthy food, and obedience to all the laws of health. Stimulants give an appearance of strength without the reality. A person feels stronger under their influence, while in reality weaker by the loss of nerve power which unnatural excitement always involves. A long-continued course of stimulation, even of a mild character, will so weaken the nervous system as to utterly unfit a woman to endure the ordeal of the final termination of pregnancy, and a vast amount of mischief has been occasioned in this way. The only time when stimulants of any sort are needed is at the very close of pregnancy, when the system is taxed to the uttermost by the efforts of childbirth; and if the system has been previously accustomed to the use of stimulants, it will not respond at the moment when

an extraordinary exhibition of nerve power is demanded, the vital resources having been previously exhausted by the habitual demands made upon them. This matter we consider of very great importance, and worthy of the most serious consideration on the part of mothers.

What has been said of the common alcoholic liquors is equally true of hard cider, not always regarded as a stimulant, and especially of the various brands of "bitters," all of which contain alcohol, some of them in considerable quantity. We do not except even "temperance bitters," which we have proved to contain as much alcohol as many brands of lager beer. "Bitters" as a class are filthy concoctions of bad whisky and various cheap herbs of no real value except as a means of enriching the pockets of their mercenary manufacturers.

The idea recently advanced, that food which is rich in bone-making material should be avoided during the pregnant state, we consider a mischievous error which ought to be corrected. It is really dangerous to mother as well as child to follow this advice, since Nature is not easily thwarted in the attainment of her purposes; and when bone-making material is needed for the child, if an adequate supply is not afforded from some other source, she will not hesitate to seize upon such material which has already been deposited in the system of the mother, thus damaging, sometimes to a serious extent, the osseous system of the mother for the benefit of the developing child whose interests are sometimes made paramount to those of the parent. The notion that labor is made

more severe or dangerous by supplying the child with such nourishment as its proper development really requires is so contrary to the conclusions which would be dictated by ordinary good sense that we are astonished to see it given any credence. The bony system of the child will not be developed to such an extent as to furnish any impediment to parturition, even when bone-making material is provided in greatest abundance, unless there is some morbid condition; and when this is the case—and it cannot be determined beforehand—the omission of certain articles of diet will not be likely to affect the diseased condition to a sufficient degree to make any appreciable difference with the result. Fortunately, also, this morbid development of the child before birth is so exceedingly rare that if real benefit were to be derived from a special dietary excluding the whole-grain preparations and other foods rich in bone-making material, it would not be worth while to starve nine hundred and ninety-nine embryonic human beings for the doubtful benefit which might be afforded to the mother of the one-thousandth.

“Longings.”—The craving which pregnant women often experience for various articles of food cannot be regarded as an expression of a real want upon the part of the system, for very often the articles most eagerly desired are those of a positively injurious character; however, it is generally best to yield to the demands of the capricious appetite so far as can be done without doing positive injury to the digestion or the interests of the child, especially if there is much nausea and loss of appetite. We feel

confident, however, that in the majority of cases the craving is not so strong that it cannot be readily controlled by a little determination on the part of the prospective mother, and when the article craved is manifestly an improper one, the will should be set actively at work to resist the morbid appetite.

The popular notion that if a craving of this character is not gratified, the child will be marked in some peculiar manner corresponding to the nature of the craving, either mentally or physically, is an error. The occasional instances of seeming confirmation of the notion are nothing more than coincidences. We refer particularly to the supposition that "mothers' marks," so-called, which often resemble berries of various kinds, are produced by a craving on the part of the mother for the variety of fruit which they happen to resemble. It is of course possible that a prolonged and absorbing "longing" on the part of the mother for any particular article might so affect the mental and nervous systems of the child as to develop in it a similar appetite; but we do not think the influence of such mental conditions on the part of the mother are usually sufficiently prolonged to produce any such effects. "Longings" are usually very capricious in character, and the constant change counteracts the danger of the formation of a morbid tendency in the child.

The appetite of the mother is often so delicate and capricious that special pains must be taken to provide such food as will be inviting and palatable; but we do not approve of the common practice of humoring every whim and fancy which the mind may

happen to fasten upon. A morbid and unnatural appetite, if strong and not controlled by the will, may be most easily gotten rid of, sometimes, by being gratified, provided the gratification is not continued. If the "longing" is of a very tantalizing and teasing character, this means may be tried as a last resort; but care must be taken that the use of the injurious article is not continued any length of time.

Under a healthful regimen, mental, moral, and physical "longings" are not usually difficult to control, and seldom become at all troublesome. Those in whom they are the most imperious are usually persons who have habitually yielded to the demands of appetite, and who are of an impulsive disposition and have not acquired the art of self-control. The cultivation of firmness of character and subordination of the emotions and impulses to the reason and judgment are the very best measures to be recommended for the prevention of this one of the inconveniences involved by the pregnant state.

Exercise.—The advantages to be derived from the taking of regular, systematic exercise during the whole period of pregnancy are so great that no woman, whatever her station in life, can afford to ignore this means of securing a safe and speedy termination of the parturient process. Nothing should be more unstintedly condemned by physicians than the habit many women form when pregnant, of yielding to the languor which is often very oppressive, and spending most of their time, especially during the later months of pregnancy, in idleness and inactivity. A pregnant woman who spends most of her time upon

the sofa or in an easy chair, may look forward with certainty to a childbirth, the dangers and sufferings of which will be greatly increased by the bad bodily conditions arising from her indolence. No class of women pass through this trying ordeal so rapidly and so easily as those whose station in life requires of them a daily use of the muscles to such a degree as to maintain good muscular tone and bodily activity. We have known washer-women who worked up to the very day of confinement, to be able to resume their occupation the day following without inconvenience, although contrary to the advice of their physicians. The ease with which the negro women of the South give birth to their children has long been remarked; and those who are familiar with the wild native tribes of our country assure us that an Indian woman thinks little of the inconveniences of childbirth, and if on a journey stops only for a few hours for rest, and to properly care for her infant, and then is ready to mount her pony and proceed to her destination. The same remark is true of other savage tribes. It is chiefly among the middle and higher classes of society that the pains of childbirth are felt and the dangers of maternity experienced. This fact is almost conclusive evidence that the habits of luxury and idleness which are so common among the women of these classes are the chief causes of making a process which is naturally attended by little suffering and danger, so extremely painful and even hazardous that it is looked forward to with indescribable dread and avoided by every possible means.

The obstetrical process is chiefly muscular in

character. The child is expelled from the womb by the contractions of the womb itself, aided by the action of the muscles of the abdomen. Nearly all the muscles of the trunk are involved in the process, if not in direct action upon the womb or its contents, in so fixing the points of attachment of other muscles as to enable them to bring their whole force to bear in direct expulsive efforts. Hence it is apparent that good muscular ability is one of the most excellent preparations which a woman can possess for the easy and speedy performance of this act.

A woman whose muscles have wasted away in idleness has a long, lingering, painful childbirth because of the weak and inefficient character of the muscular efforts which she is able to make. Hour after hour the womb makes vigorous contractions which are ineffectual because not seconded by the action of other muscles which are weak and powerless from disuse, and the unaided organ becomes exhausted before it has accomplished any real progress. Thus the process lingers till the agony becomes so extreme and unendurable that the physician is obliged to come to the rescue with a pair of forceps and extract the child by force, running the risk of mutilating its features, compressing its delicate brain to such a degree as to injure its mental development, or even destroy its life entirely, to say nothing of the risk of lacerating or tearing the neck of the womb and other soft parts which have not been properly dilated on account of the absence of the successive stages which should precede the final one of delivery. At the present day no obstetrician thinks of going to a

confinement without a pair of forceps in his visiting case, and many physicians whose practice is chiefly among the higher classes, rarely leave the lying-in chamber without making use of the obstetrical forceps.

Two centuries ago forceps were not known, and were rarely needed. The conditions which demanded the use of such an instrument were so rare that their necessity was not recognized. To-day their use is becoming yearly more necessary, and the prospect is that at the present rate of progress in this direction the children of the next generation will nearly all be brought into the world by the aid of this mechanical means.

[Some persons cry out against this increasing use of the forceps as though the instrument were a means of torture invented by the doctors for the purpose of aggravating the sufferings of womankind,—a most heartless insinuation against the character of the most generous and self-sacrificing of all professions. The forceps are not an invention made and utilized by the medical profession for any other purpose than the mitigation of sufferings which women bring upon themselves by inattention to the immutable laws of nature.]

If women had always lived physiologically, it is probable that such a thing as the (obstetric forceps,) or such a person as a (man midwife,) would not to-day exist. The fact is the departures from healthful modes of life have entailed upon woman so much suffering and have encompassed the process of child-bearing with such a host of dangers and possible complications, that it has become necessary that the best intellects

of the world should bend their energies to the devising of means to mitigate the sufferings and lessen the dangers to both mother and child in the crowning process in the procreation of the species.

From the earliest period of pregnancy moderate but regular and systematic exercise should be daily taken. Walking is a most excellent form of exercise for women in this condition, as it calls into gentle activity nearly all the muscles of the trunk as well as those of the limbs. Light calisthenics are also very useful. Special forms of exercise, such as will strengthen the muscles of the abdomen and back, particularly, are in the highest degree desirable. Some of the most valuable of these will be found in the appendix.

Occupation of mind as well as body is very desirable during the whole period of pregnancy, and especially toward the latter end of the period. On this account the exercise afforded by ordinary household duties constitutes one of the best forms of exercise. (But it should not be forgotten that the ample supply of fresh air and sunshine which can be obtained only by exercise in the open air is absolutely essential to the maintenance of the high degree of bodily health which is demanded for the perfect accomplishment of the object of the process through which the woman is passing. When long walks cannot be taken, carriage riding may be substituted. These systematic exercises should be taken up to the very day of confinement, care being exercised, of course, to avoid violent exertion of all kinds, and especially about the third and seventh months, particularly if there has pre-

viously been a premature birth or a miscarriage, the latter being most likely to occur at the third month and the former at the seventh.

Massage.—When the patient is for any reason unable to take any of the forms of exercise suggested, passive or active-passive movements may be substituted. Massage and Swedish movements constitute the best forms of passive movements for use in these cases. Such of these movements as we consider most useful will be found described in the appendix. Care should also be taken with these movements not to so over-do them as to excite premature action in the womb. There is, however, far less danger from this cause than is generally supposed.

Dress.—The evils of fashionable dress have been quite fully considered in a preceding section of this work, and hence we do not need to amplify upon the same subject here; but we wish to impress the fact that all the objections urged against the several evils involved in fashionable modes of dressing are still more cogent when applied to the condition of pregnancy. For a pregnant woman to wear clothing tight about the waist is so manifest an outrage upon nature that the practice was prohibited by law by an ancient Grecian legislator, and ought to be by modern legislatures. Whatever a woman has a right to do to her own body, she has no right to blight for all time the prospects of another being possessed of individual rights as well as herself, although yet a prisoner within her own body. The practice of some women in lacing themselves all through the period of pregnancy for the purpose of “preserving their form,” is

nothing short of absolute cruelty, not only to themselves, but to their unborn infants. Such a practice is so manifestly outrageous that it can scarcely be condoned. Nothing should be worn about the body of a pregnant woman of a close-fitting character. The garments should be perfectly loose. Such a thing as a corset should not be thought of, although now and then an elastic abdominal supporter or a wide bandage made to fit the abdomen may be necessary. The muscles of the back and abdomen should be so strengthened by exercise that they will be prepared to sustain themselves without the aid of "bones" or anything of the sort. The fact that the need of such aids is felt is evidence of the strongest character that their use would be injurious and that what is really required is a course of muscular training by which the weakness may be overcome.

The remarks which have elsewhere been made respecting the equable protection of the body and the clothing of the feet, are all particularly applicable to the pregnant condition, but need not be repeated here.

The underclothing should be of soft flannel, by preference. If woolen fabrics are not well tolerated by the skin, as is sometimes the case, thin silk or cotton garments may be worn next the skin with thicker woolen garments outside; but when the skin is not irritable, woolen next the skin is much to be preferred to any other fabric.

A word should be said in this connection about the relation of clothing to the breasts. The compression of the breasts by corsets is often the cause

of great injury and suffering. The long-continued pressure causes some degree of atrophy of the gland and also obliteration of some of the ducts so that the proper secretion of milk may be made impossible, and if the secretion is established, abscesses are likely to form, causing "broken breasts" and all the attendant suffering and subsequent deformity. Compression also frequently causes so great a depression of the nipple as to make nursing difficult or impossible, a condition which often requires a long and persevering treatment to overcome, and may not be remediable even by this means.

The wearing of "pads" over the breasts is also a practice to be condemned, as by this means the heat is retained and an unnatural condition produced which renders the gland susceptible to disease and less able to perform its proper function. The unnaturally sensitive condition of the gland during pregnancy makes these facts particularly important at that time.

Bathing.—The influence of baths in maintaining a healthy condition of the system in general has been so well understood for years that we need not say more on this point than to impress the importance of giving special attention to the maintenance of a healthy action of the skin by frequent bathing. A general bath should be taken at least twice a week, and every other day is not too often for most persons. Special attention should be given to local cleanliness, as the increased blood supply of the parts increases the local secretion and makes more frequent cleansing necessary, while under ordinary circumstances a local bath with fine castile soap and water may not be re-

quired more than two or three times a week. During gestation such a bath is needed at least daily. No fear need be felt that the bath will disturb the contents of the womb. The bath may be taken with an ordinary syringe, care being taken not to employ more than very gentle force, and that the temperature of the water is not above 100° F. nor below 90° F. The best means for taking a local douche is the syphon or fountain syringe. For further directions, see appendix. A little soap should be used, and if there is considerable leucorrhœa, certain remedies, as elsewhere directed.

Aside from these baths, which are useful in a general way, other baths may be taken which are of very great value as means of preparing the system for easy childbirth. Among the most useful of these is the sitz bath, directions for taking which will be found in the appendix. The temperature of the water should be about 94° F. at the beginning of the bath, and should be cooled to about 88° F. at the conclusion, after continuing ten minutes to half an hour. The warm vaginal douche taken in connection with the bath, the quantity used being one to three or four gallons of water at a temperature as nearly as possible that of the body, is a most valuable additional means of obviating many of the dangers of childbirth, and facilitating the exit of the new being into the world. These two baths combined will accomplish more to lessen the suffering of childbirth than all other known means. They are especially serviceable in cases in which there has been previous disease of the womb. We should add in this connection the cau-

tion that the temperature should not vary much from that of the body, as either a hot or a cold douche might occasion a miscarriage.

The baths above described should be taken during the early months of pregnancy, two or three times a week, and daily or even twice a day during the last few weeks. We have seen the most satisfactory results follow the employment of these simple measures when perseveringly used, even when the same persons had on previous occasions suffered extremely.

Care of the Breasts.—By proper care of the breasts during the few months preceding childbirth, much suffering during the nursing period may be saved to the mother, and dangers to the child may be avoided. As previously observed, the breasts should not be compressed by tight clothing, nor heated by “pads.” They should be protected from pressure and from overheating. The effect of pressure is to depress the nipple so that it cannot be grasped by the mouth of the child, thus making nursing impossible, and also, when severe and long-continued, to obliterate the ducts of some of the gland lobules, thus confining the milk secretion and giving rise to abscesses or “broken breast” after childbirth.

When tender, as is often the case during pregnancy, a hot fomentation or a hot poultice may be applied. Pain accompanied by excessive heat may be relieved by the application of cool compresses.

When the nipple is small and retracted, it should be drawn out daily by the fingers of the mother or nurse, and friction and manipulation should be em-

ployed so as to secure a proper degree of development to prepare it for the child.

When the breasts are small and undeveloped, and there is apprehension that they will fail to supply the necessary nourishment for the child, daily manipulation with the hands should be practiced, together with the daily application of alternate hot and cold sponging or compresses. By this means much can be done to overcome deficiency of development and often to a remarkable degree.

When the surface of the nipple or of the breast in the immediate vicinity is sore or tender, some hardening lotion should be used, as alum or borax in whisky, decoction of oak bark or solution of tannin, or sulphate of zinc solution. See appendix for prescriptions.

Hygiene of Ante-Natal Life.—The influence of the mother upon the child during gestation has already been referred to under the head of "Heredity," and the facts there presented need not be repeated here. We wish, however, to impress still further a few points, and especially to call attention to the fact that since it is evident that accidental influences and circumstances acting upon the mother affect the child either favorably or unfavorably, it becomes the duty of the mother to surround herself with such influences and to supply such conditions and circumstances as she knows will be for the best good of her developing infant. In this work she should be aided so far as possible by her husband and by all those about her who have an opportunity to render her assistance. Work of so important a character as this, the

influence of which can only be estimated in eternity, demands the earnest and prayerful attention of every prospective mother. The self-denial which must be exercised, the subordination of the appetites, desires, tastes, and convenience to the interests of another being which the duties of the mother involve, afford a moral discipline which if rightly appreciated must result in good to the mother as well as to the child, and, like every act of duty in life, no matter how remotely relating to the individual, reacts upon the doer through the reflex influence of mental and moral discipline.

The special influence of the mother begins with the moment of conception. In fact it is possible that the mental condition at the time of the generative act has much to do with determining the character of the child, though it is generally conceded that at this time the influence of the father is greater than that of the mother. Any number of instances have occurred in which a drunken father has impressed upon his child the condition of his nervous system to such a degree as to render permanent in the child the staggering gait and maudlin manner which in his own case was a transient condition induced by the poisonous influence of alcohol. A child born as the result of a union in which both parents were in a state of beastly intoxication was idiotic.

Another fact might be added to impress the importance of having the new being supplied from the very beginning of its existence with the very best conditions possible. Indeed, it is desirable to go back still further, and secure a proper preparation

for the important function of maternity. The qualities which go to make up individuality of character are the result of the summing up of a long line of influences, too subtle and too varied to admit of full control, but still, to some degree at least, subject to management. The dominance of law is nowhere more evident than in the relation of ante-natal influences to character.

The hap-hazard way in which human beings are generated leaves no room for surprise that the race should deteriorate. No stock-breeder would expect anything but ruin should he allow his animals to propagate with no attention to their physical conditions or previous preparation.

Finding herself in a pregnant condition, the mother should not yield to the depressing influences which often crowd upon her. The anxieties and fears which women sometimes yield themselves to, grow with encouragement, until they become so absorbed as to be capable of producing a profoundly evil impression on the child. The true mother who is prepared for the functions of maternity, will welcome the evidence of pregnancy, and joyfully enter upon the Heaven-given task of molding a human character, of bringing into the world a new being whose life-history may involve the destinies of nations, or change the current of human thought for generations to come.

The pregnant mother should cultivate cheerfulness of mind and calmness of temper, but should avoid excitements of all kinds, such as theatrical performances, public contests of various descriptions, etc. Anger,

envy, irritability of temper, and, in fact, all the passions and propensities should be held in check. The fickleness of desire and the constantly varying whims which characterize the pregnant state in some women should not be regarded as uncontrollable, and to be yielded to as the only means of appeasing them. The mother should be gently encouraged to resist such tendencies when they become at all marked, and to assist her in the effort, her husband should endeavor to engage her mind by interesting conversation, reading, and various harmless and pleasant diversions.

If it is desired that the child should possess a special aptitude for any particular art or pursuit, during the period of pregnancy the mother's mind should be constantly directed in this channel. If artistic taste or skill is the trait desired, the mother should be surrounded by works of art of a high order of merit. She should read art, think art, talk, and write about art, and if possible, herself engage in the close practical study of some one or more branches of art, as painting, drawing, etching, or modeling. If ability for authorship is desired, then the mother should devote herself assiduously to literature. It is not claimed that by following these suggestions any mother can make of her children great artists or authors at will; but it is certain that by this means the greatest possibilities in individual cases can be attained; and it is certain that decided results have been secured by close attention to the principles laid down. It should be understood, however, that not merely a formal and desultory effort on the part of the mother is what is required. The theme selected

must completely absorb her mind. It must be the one idea of her waking thoughts and the model on which is formed the dreams of her sleeping hours.

The question of diet during pregnancy, as before stated, is a vitally important one as regards the interests of the child. A diet into which enters largely such unwholesome articles as mustard, pepper, hot sauces, spices, and other stimulating condiments, engenders a love for stimulants in the disposition of the infant. Tea and coffee, especially if used to excess, undoubtedly tend in the same direction. We firmly believe that we have, in the facts first stated, the key to the constant increase in the consumption of ardent spirits. The children of the present generation inherit from their condiment-consuming, tea-, coffee-, and liquor-drinking, and tobacco-using parents, not simply a readiness for the acquirement of the habits mentioned, but a propensity for the use of stimulants which in persons of weak will-power and those whose circumstances are not the most favorable, becomes irresistible.

The present generation is also suffering in consequence of the impoverished diet of its parents. The modern custom of bolting the flour from the different grains has deprived millions of infants and children of the necessary supply of bone-making material, thus giving rise to a greatly increased frequency of the various diseases which arise from imperfect bony structure, as rickets, caries, premature decay of the teeth, etc. The proper remedy is the disuse of fine-flour bread and all other bolted grain preparations. Graham-flour bread, oatmeal, cracked wheat,

and similar preparations should be relied upon as the leading articles of diet. Supplemented by milk, the whole-grain preparations constitute a complete form of nourishment, and render a large amount of animal food not only unnecessary but really harmful on account of its stimulating character. It is by no means so necessary as is generally supposed that meat, fish, fowl, and flesh in various forms should constitute a large element of the dietary of the pregnant or nursing mother in order to furnish adequate nourishment for the developing child. We have seen the happiest results follow the employment of a strictly vegetarian dietary, and do not hesitate to advise moderation in the use of flesh food, though we do not recommend the entire discontinuance of its use by the pregnant mother who has been accustomed to use it freely.

A nursing mother should at once suspend nursing if she discovers that pregnancy has again occurred. The continuance of nursing under such circumstances is to the disadvantage of three individuals, the mother, the infant at the breast, and the developing child.

Sexual indulgence during pregnancy may be suspended with decided benefit to both mother and child. The most ancient medical writers call attention to the fact that by the practice of continence during gestation, the pains of childbirth are greatly mitigated. The injurious influences upon the child of the gratification of the passions during the period when its character is being formed, are undoubtedly much greater than is usually supposed. We have no doubt that this is a common cause of the transmission of libidinous tendencies to the child; and that the ten-

dency to abortion is induced by sexual indulgence has long been a well-established fact. The females of most animals resolutely resist the advances of the males during this period, being guided in harmony with natural law by their natural instincts, which have been less perverted in them than in human beings. The practice of continence during pregnancy is also enforced in the harems of the East, which fact leads to the practice of abortion among women of this class who are desirous of remaining the special favorites of the common husband.

The general health of the mother must be kept up in every way. It is especially important that the regularity of the bowels should be maintained. Proper diet and as much physical exercise as can be taken are the best means for accomplishing this. When constipation is allowed to exist, the infant as well as the mother suffers. The effete products which should be promptly removed from the body, being long retained, are certain to find their way back into the system again, poisoning not only the blood of the mother but that of the developing foetus.

THE DISORDERS OF PREGNANCY.

The pregnant condition is one which is especially liable to certain derangements of the system, some of which are wholly peculiar to this state, while others are frequently the result of other causes. It cannot be justly supposed that these morbid conditions are necessary accompaniments of the function of maternity, for they do not appear when the function is per-

formed in a perfectly physiological manner. They must be regarded as among the results of the perverted state into which the race has fallen, and in which there have been great departures in a great variety of ways from the normal conditions of the race. It should be added that a careful observance of all the suggestions made in the preceding section will effectually prevent nearly all the disorders to which we here call attention.

"Morning Sickness."—This is one of the earliest, and sometimes one of the most serious, complications of pregnancy, occurring usually only in the earlier and later months of pregnancy. The nausea, sometimes accompanied by vomiting, most often occurs in the morning just after rising.

Treatment.—This difficulty is often very obstinate, but very simple measures will give relief in the majority of cases.

Give the patient something to eat before she rises in the morning, as a bowl of brown bread and milk. Food should be taken at least fifteen or twenty minutes before attempting to get up, and after rising, the patient should dress quickly and go out in the open air for a walk, unless the weather forbids.

The abdominal bandage is a very excellent means of relieving this unpleasant symptom. It should be worn continually for a week or two both day and night and then should be omitted during the night. Daily sitz baths are also of great advantage. In many cases, electricity relieves this symptom very promptly. When nearly all kinds of food are rejected, milk and lime-water may be employed. In

very urgent cases in which the vomiting cannot be repressed, and the life of the patient is threatened, the stomach should be given entire rest, the patient being nourished by means of nutritive injections. (See appendix.) Fomentations over the stomach and swallowing of small bits of ice, are sometimes effective when other measures fail.

It is claimed by some gynecologists of large experience that this symptom is the result of disease of the neck of the womb, particularly abrasion. It is recommended that slight dilatation of the os-uteri should be employed. This should of course be done by a physician or an experienced nurse.

Acidity and Flatulence.—When there is much acidity or flatulence, conditions which are very common indeed, vegetables and starchy foods should be avoided, together with butter, sugar, pastry, and sweets of all descriptions. Such persons should also for a time avoid the use of raw fruits and soups, and should refrain from taking much fluid at meals. The use of hot water in considerable quantity about three hours after each meal is a most excellent remedy for this condition, the effect being to cleanse the stomach from its souring, fermenting contents and to stimulate the sluggish, digestive processes to more vigorous action. The use of hot milk at the time of eating is also to be recommended in these cases. Both the water and the milk should be taken at as high a temperature as possible without discomfort. .

Various disorders of digestion are exceedingly common during this period, such as heartburn, pyro-

sis, etc., most of which can be quite promptly relieved by the adoption of such dietetic measures as are required by the particular condition present. All of these conditions, with their proper treatment, are thoroughly discussed in a volume by the author entitled, "Digestion and Dyspepsia," to which the reader is respectfully referred, as our space is too limited to allow of the full consideration of the subject here.

Constipation.—This condition is so very common that we cannot omit noticing it here, although we have treated the subject more fully in the work referred to above. In many cases relief will be afforded by the adoption of a diet composed chiefly of fruits and grains. The large use of flesh meats and of fine-flour bread is one of the most common causes of inactivity of the bowels during pregnancy. The coarse grain preparations should be freely used, and also vegetables, when the patient is able to digest them. Figs, stewed prunes, and other fruits of a laxative character, if freely used by the patient, will generally obviate the necessity for other means. Drinking a glass of cold water before breakfast is an excellent means of securing a regular evacuation of the bowels.

In case dietetic measures are insufficient, the enema may be resorted to. As small a quantity of water should be used as will secure the desired movement. It is also better to employ water at a moderately low temperature, so as to keep the blood-vessels of the part well toned, as a means of preventing hemorrhoids. A very excellent plan by which

the dependence upon the enema may be somewhat avoided, or overcome, is to inject into the rectum at night, just before retiring, two tablespoonfuls of water containing ten drops of spirits of camphor. This will often provoke a movement of the bowels at once. If the fluid is retained over night, it will be quite certain to secure a prompt movement, at least if the same quantity of camphor water is used as an enema soon after breakfast. A tablespoonful of glycerine in three or four spoonfuls of water used in the same manner is equally useful and often more agreeable to the patient.

Light massage to the bowels, together with exercises of the trunk such as are recommended for the purpose of strengthening the abdominal muscles (see appendix), is of great value in relieving this unpleasant symptom. The same is to some degree true of walking and gentle calisthenic exercises.

It is very unwise to become dependent upon the use of the enema, and hence a persevering effort should be made to secure a healthy activity of the bowels by regulation of the diet, and by the employment of the other means suggested. The same remark is still more emphatically true respecting the use of the laxatives of various sorts so commonly resorted to by pregnant women. The habit thus formed is very often difficult to overcome, and the resulting mischief more than can be well described.

Hemorrhoids, or Piles.—This condition is the usual accompaniment of the preceding, of which it is commonly the result, although it is sometimes fairly attributable to the pressure exerted upon the blood-

vessels of the lower bowels by the pregnant womb. The suffering from this source is often very great, constituting one of the most serious inconveniences of the pregnant state.

Treatment : Keep the bowels loose by means of the measures mentioned for the relief of constipation. Linseed tea is especially serviceable for an emollient enema. If the constipation is very obstinate, a soap and water enema may be employed to empty the bowels. (See appendix.)

The pain of hemorrhoids may generally be relieved by the application of a hot fomentation. A large, soft sponge is useful for the purpose. The daily sitz bath which should be taken during the later months of pregnancy is a most excellent means not only of allaying the pain by relieving local congestion, but also overcoming the tendency to constipation. When the pain of moving the bowels is very great, the patient will find great relief by sitting over a vessel half filled with hot water for a few minutes before making the attempt. In some cases it is better that the water should be in immediate contact with the body.

When there is hemorrhage from the bowels, or "bleeding piles," an ointment consisting of a dram of tannin dissolved in an ounce of vaseline should be thoroughly applied after each movement, care being taken to introduce the ointment to the point at which the bleeding occurs.

Disorders of the Bladder.—The bladder is often the seat of troublesome affections during the pregnant condition. Abnormal irritability, pain in passing

urine, inability to retain the urine a proper length of time, and the opposite condition, or failure of the bladder to evacuate its contents as frequently or completely as proper, are among the most common troubles of this sort. Irritability of the bladder is most generally due to neglect to empty the bladder of its contents with proper frequency and regularity. In some cases, the bladder troubles are due to displacements of the womb existing before pregnancy occurred. This is especially true of incontinence of urine, which generally results in these cases from pressure upon the bladder by the enlarged and displaced womb.

Irritability of the bladder is generally relieved by copious water-drinking, the free use of fruit, and relieving the organ regularly once in five or six hours. The recumbent position is the best remedy for incontinence of urine. Sometimes this difficulty may be prevented by the use of the abdominal bandage for the purpose of holding the uterus in place. Retention can often be overcome by the employment of the warm sitz bath, the bladder being relieved while in the bath. Another very efficient means of overcoming retention is the warm vaginal douche. The temperature should be as nearly as possible 100° F., the internal temperature of the body. The bladder will generally evacuate itself during the administration of the douche. The hot enema is also of service in these cases.

Disorders of the Womb.—The occurrence of pregnancy in a woman suffering with chronic disease of the womb is generally a most unhappy event, notwithstanding the fact that a cure is sometimes sought

through this means. Disease of the womb greatly increases the perils of the pregnant condition, and is not likely, in the majority of cases, to be at all benefited by the changes induced by pregnancy.

Prolapsus and retroversion are conditions which often require the attention of a physician to relieve. If begun in time, however, great benefit may be derived from the postural treatment described in the appendix, and particularly the knee-chest position illustrated on Plate XII.

Vaginal Discharges.—The discharges which take place from the vagina during pregnancy are quite various. The most common is a profuse mucous discharge or leucorrhœa, the best remedy for which is the daily use of vaginal injections administered with the syphon or fountain syringe. The water should be at the temperature of the body, and little force should be employed. The various remedies elsewhere recommended for leucorrhœa are useful in this form of the affection.

Occasionally strong gushes of a watery fluid occur, followed for some time by a dribbling of the same. The remedy for this difficulty is complete rest in bed. Fluid discharges occurring during pregnancy should receive prompt attention, as they indicate a liability to miscarriage.

Itching Genitals.—This affection is usually an accompaniment of an acrid leucorrhœal discharge. The treatment is the same as elsewhere described for the same affection.

Varicose or Enlarged Veins.—This condition of the veins of the lower extremities is a very frequent

complication of pregnancy, and is often the source of much suffering and inconvenience to the patient not only during the pregnancy, but afterward. Hence it should receive careful attention. The cause is mechanical, being found in the pressure of the heavy uterus against the large veins which return to the heart through the abdomen the blood gathered by the veins of the lower extremities. Sometimes a similar enlargement of the veins of the external organs of generation on one or both sides also occurs.

Treatment: The limbs should be supported by means of an elastic bandage or elastic silk stocking, whenever the patient is on her feet. A flannel bandage made of strips of flannel torn across the web so as to give some elasticity may be used in place of the rubber bandage, though less efficient. The bandage should be applied evenly, from the toes upward, as high as needed, even extending to the body if necessary. When the patient is sitting or lying down, the feet should be elevated a little higher than the hips if possible. If the labia become very much swollen, the patient should remain as much as possible in a horizontal position, in the meantime pressing out the blood from the distended veins by steady compression with the hand. A pad and bandage can be adjusted in such a way as to answer the same purpose.

Dropsical Swelling of the Feet and Limbs.—General dropsy, indicated by puffiness of the face and swelling of the limbs so that pitting is produced by pressure with the finger, is a very serious complication of pregnancy, indicating probable disease of the

kidneys. This condition should receive prompt attention from a competent physician, to whom should be given a specimen of the urine for examination. The most useful remedies are such as will induce active perspiration, as the hot-air bath, the wet-sheet pack, the blanket pack, etc. The patient should be allowed no animal food except milk, the diet being made up chiefly of fruits and grains. When the swelling is confined to the feet and limbs, it may be treated by means of the bandage or the elastic silk stocking as directed for varicose veins of the limbs.

Rubbing of the feet and limbs in an upward direction is a means of treatment which should not be neglected. The rubbing should be administered two or three times daily, and for half an hour at a time.

Neuralgia.—The neuralgia of pregnancy is sometimes a most disagreeable complication. The affection may assume a great variety of forms. It most frequently affects the face. Very often the teeth are the seat of the pain. Sometimes the pain is mostly confined to the back or chest or the limbs.

Treatment: The most useful measures of treatment are fomentations to the affected part, the use of dry heat, alternate hot and cold applications, and electricity, particularly the galvanic current. These measures are not usually efficient, however, unless the exciting cause, which may generally be found to be some form of indigestion or an impoverished condition of the blood, is carefully sought for and removed.

Headache and Disturbances of Vision.—Severe, continuous headache and various disturbances of vision, such as blurring, double sight, etc., are some-

times of quite serious import. These cases should be investigated by a competent physician. Whenever these symptoms occur, a careful examination of the urine should be made, to determine if albumen is present. The headache may generally be relieved by cool or hot compresses to the head, hot fomentations, or hot and cold sponging of the upper part of the spine, warm sitz or foot baths, and other derivative measures.

Shortness of Breath.—Shortness of breath or difficulty of breathing is frequently among the most prominent inconveniences of the latter stages of the pregnant state. Patients subject to asthma, and affected with organic disease of the heart, suffer much more than do others. The interference with respiration is produced in most cases by crowding upward of the abdominal organs against the diaphragm, thus preventing its proper descent, and making it impossible for the patient to take a full inspiration. Shortness of breath is sometimes due to poverty of the blood.

The first class of cases can be relieved but little, as the cause cannot be removed. Some advantage may be derived, however, by the application of faradization to the chest, for the purpose of strengthening the respiratory muscles. In cases in which the difficulty arises from debility, the patient should receive such treatment as will secure improvement of nutrition.

Fainting.—This symptom occurs quite frequently during the first few months of pregnancy. The cause is the morbidly susceptible condition of the

nervous system during this period, very slight causes being sufficient to occasion intense mental excitement and profound disturbance of the circulation.

Miscarriage and Abortion.—These terms are applied to cases in which the foetus is discharged before the seventh month. Miscarriage occurs most frequently in fleshy persons and those who are subject to menorrhagia, or profuse menstruation. Nearly all the severe acute diseases may give rise to miscarriage. Violent excitement or exertion, either mental or physical, displacements of the uterus, together with chronic inflammation and tumors of the organ, falls, and other violent accidents, severe vomiting or coughing, bad hygiene, and sexual indulgence, may be enumerated as the principal causes of abortion.

The symptoms of abortion within the first two weeks do not differ very greatly from those attending profuse menstruation. Not infrequently miscarriages occur at this period without the woman's being conscious of the fact. In the third or fourth month, there is considerable hemorrhage, and some portion of the foetus is likely to be retained in the womb, where decomposition not infrequently takes place, imperiling the patient's life. Criminal abortion is very frequently attended by fatal results. The moral aspect of this question has been fully considered elsewhere. (See pages 351–369.) Miscarriage occurring as late as five or six months, very closely resembles labor.

It has been observed that miscarriage is most apt to occur at or near the regular time for menstruation,

if the function had continued, and hence special care should be observed at these periods.

Treatment: In cases in which abortion habitually occurs at a certain time, complete rest should be enjoined upon the patient. She should not be upon her feet at all until the dangerous period is past. Sexual excitement should also be strictly prohibited. In case flooding occurs, or other symptoms of abortion, the patient should at once go to bed and apply cold compresses over the bowels, and tepid injections of tannin or a decoction of white-oak bark into the vagina. Abortion or miscarriage is much more likely to be followed by disease of the womb than natural labor, and hence every possible precaution should be taken to prevent exposure and overdoing in these cases.

Premature Labor.—Births occurring after the beginning of the seventh month are termed premature. The causes are essentially the same as those which produce abortion. The rules laid down for the management of labor at full term, are equally applicable to premature labors. It should be remarked that extra preparations should be made to give the feeble infant likely to be born in these cases the best possible chances for life.

Death of the Fœtus.—When many symptoms of pregnancy which have been distinctly present disappear, there are grounds for suspicion that death of the fœtus has been occasioned by some cause. The causes which occasion death of the fœtus are essentially the same as those which give rise to abortion and premature labor. The fœtus is generally expelled

a week or ten days after it dies, but cases are recorded in which it has been retained many months.

Molar or False Pregnancy.—Two forms of false pregnancy occur. In one of these, after the usual symptoms of abortion, and with considerable pain and hemorrhage, a fleshy body of varying size is expelled, which may be shown by a close examination to be an undeveloped foetus. This form of false pregnancy is attended by little danger.

In the other form, the symptoms of pregnancy continue up to the fourth or fifth month, though no foetal movements are ever felt. The abdominal walls are generally extended more than at the same time in true pregnancy. After a time, a large quantity of bloody serum is discharged, along with severe hemorrhage, the escaping fluid containing small, bladder-like bodies resembling grapes. This is known as the hydatidi-form. This form of false pregnancy is by no means free from danger, and requires the attention of a skilled physician.

Flooding.—When this serious symptom occurs, the patient, if not already in a recumbent position, should at once go to bed. Cold compresses should be applied over the lower part of the bowels. She should be given an abundance of cold water to drink. Cold water may also be injected into the rectum with advantage. In case of a severe hemorrhage after miscarriage or premature labor, the best remedy is the prolonged hot-water vaginal douche. If not speedily effective, a strong, hot, saturated solution of alum, about one pint in quantity, should be injected into the vagina. If necessary, a tablespoonful of

powdered alum may be carefully inclosed in a bag of thin muslin and introduced into the vagina and retained for a few hours.

Puerperal Convulsions.—This is a very serious disease which may occur during pregnancy, or during or after labor. It generally occurs in patients who have suffered with disease of the kidneys during pregnancy, as shown by swelling of the feet and limbs, puffiness of the face, and the presence of albumen in the urine. Among the first symptoms are disorders of vision, as blurred sight, double vision, and continuous headache. The attack generally begins with strong muscular contractions, in which the muscles of the limbs become rigid, and respiration ceases through the rigidity of the muscles of the chest. This is followed in a short time by spasmodic twitching of the various muscles. Sometimes the contortions of patients suffering with this affection are frightful. The most common, and probably the sole, cause of true puerperal convulsions, is poisoning of the blood by the elements of the urine which are not eliminated on account of congestion or inflammation of the kidneys.

Sometimes attacks occur resembling those of epilepsy. These cases are probably due to some other cause.

Treatment: The preventive treatment of this disease is by far the most important. It consists, first, in thorough attention to the laws of hygiene relating to the pregnant state. The diet should be chiefly fruit, and farinaceous articles of food. Sugar and meat should be carefully discarded. As soon as the

swelling of the feet and puffiness of the face are observed, the patient should take frequent warm baths with wet-sheet packs, vapor baths, and other treatment which will induce active sweating. Considerable quantities of water should be daily drank, so as to replace the water removed by the sweating process, which should be made almost continuous.

At the time of the attack, vigorous efforts should be made to relieve the system of the obnoxious element by which the brain and nervous system is being poisoned, through the medium of perspiration. If possible, the patient should be given a hot blanket pack, hot bottles being packed around her to induce copious sweating. A large warm enema should be administered every two or three hours. A spoon handle wrapped with cloth should be placed between the teeth to prevent the tongue's being bitten. The patient should not be violently restrained, but should be gently prevented from injuring herself. When coma is present, as is frequently the case, cold or iced compresses should be applied to the head. Hot and cold applications should be made to the spine. If these measures do not bring relief, chloroform may be used to subdue the spasms. This remedy is generally effective. When the contractions have ceased, energetic measures should be taken to prevent their recurrence by exciting activity of the kidneys and skin.

Cramps.—Spasmodic contraction of the muscles of the limbs is a very common and often troublesome affection incident to pregnancy. Measures to improve and maintain the tone of the nervous system

should be thoroughly employed as preventive means. When the cramping occurs, the affected muscles should be firmly grasped and vigorously rubbed. Sometimes the cramping may be made to cease by simply walking about for a few minutes. Fomentations or hot and cold applications made to the lower part of the spine usually afford relief in a prolonged attack where other measures fail. Hot sponging of the cramping muscles is also a useful remedy.

Painful Breast.—This unpleasant affection is not infrequently a cause of very great discomfort to the pregnant woman. When there is much heat and a tense feeling or hardness, cool compresses should be applied, cloths being dipped in cool or cold water and applied, being changed as often as they become warmed. Alternate hot and cold sponging will sometimes afford more prompt relief. When there is pain without heat, fomentations or hot sponging may be employed two or three times a day with benefit, or soothing liniments may be employed.

Palpitation of the Heart.—This symptom is the result of reflex action, and may generally be relieved by alternate hot and cold sponging of the spine, and either hot or cold applications over the heart. It is generally occasioned by some disturbance of digestion.

Rigid Skin.—In some cases the skin of the abdomen is wanting in elasticity to such a degree that great pain and uneasiness is caused by the strain upon the abdominal walls during the later months of pregnancy. To relieve this condition, the skin of the abdomen should be daily rubbed with vaseline or

olive-oil and thoroughly manipulated. Hot sponging is also a useful measure for increasing the activity of the skin and developing a healthy condition.

Malpositions.—The best time to treat malpositions is before the critical period of childbirth has arrived. This may seem to be a singular statement, but a careful consideration of the subject will be sufficient to convince any one of its truth. Active muscular exercise is one of the very best means of preventing malpositions. The head of the child being the heaviest portion, it naturally gravitates downward, thus securing a natural presentation. When, however, from any cause, a malposition has been produced, it is of the utmost importance that it should be discovered and corrected before the period of childbirth arrives. That this is possible has been demonstrated again and again. It is now well understood by scientific obstetricians that under ordinary circumstances the "presentation" can be made out weeks before the hour of confinement, and that when this knowledge has been gained, the position, if wrong, can be readily corrected by the employment of such external manipulations as the case may require. Every physician who undertakes the practice of obstetrics ought to be practically familiar with the proper method of procedure, and should make an examination of all suspected cases sufficiently early to enable him to apply the remedy. Something of an idea of the mode of applying this remedy for malpositions may be obtained by reference to Fig. 2, Plate L.

Women ought to know that by the use of this

means the pains and perils of childbirth may be almost infinitely lessened. Most obstetrical operations, so fraught with danger to both mother and child, are made necessary by malpositions which may be easily corrected without pain or inconvenience to the mother or danger to the child by proper manipulation prior to confinement. In view of this fact, every woman will recognize the importance of consulting an experienced and intelligent physician at intervals during the last months of pregnancy to assure herself that all is well, or to submit to the proper treatment for correcting any faulty position, thus avoiding the danger and suffering which might otherwise be inevitable.

In some cases it becomes necessary that a properly constructed supporter should be worn to prevent a return of the difficulty after the malposition has been corrected.

LABOR, OR CHILDBIRTH.

(See Appendix for instruction in Aseptic Midwifery.)

The period of gestation, or labor, usually lasts, in the human female, from 278 to 300 days, at the end of which time it is terminated by labor, or parturition. The approach of labor is usually indicated by premonitory symptoms for some hours or even days beforehand, but sometimes occurs suddenly without any premonitory symptoms.

The following are the leading signs of the approach of the termination of pregnancy: Gradually increasing irritability of the bladder, with much difficulty in standing or walking, and a change in form of the ab-

domen which results from the settling down of the womb, leaving the waist smaller, but increasing the prominence of the lower portion of the abdomen a short time before the labor is to begin. Also the external parts become swollen, and there is a leucorrhoeal discharge of a thick, clear matter somewhat resembling the white of an egg. Uterine contractions, quite painless in character, are also indicative of the approaching crisis. These contractions at first occur at irregular intervals. When they become regular, the labor has begun. The pains usually begin in the back and sacrum, and extend to the front part of the abdomen. What are termed false labor pains arise from colic, constipation, or irritation of the bowels. They differ from labor pains in being irregular. The term pain, as used in obstetrics, is applied to the spasmodic uterine contractions which take place, together with the pain incident to the same.

Presentation and Position.—The term presentation has reference to the particular part of the body which presents at the mouth of the womb. The term position has reference to the location of the presenting part in the passages of the mother. The most usual presentation is the head. Occasionally the other extremity of the trunk takes precedence, forming what is termed a "breech presentation." In still other cases the body lies crosswise of the outlet, a presentation which must be modified in some way before the infant can be born.

There are various modifications of each of these classes of presentation, that is, other parts of the head may present. In a perfectly natural labor, the

vertex of the head is the presenting part. But various other parts of the head may be presented, more or less complicating the process.

Stages of Labor.—Labor is divided into three stages.

1. Dilation of the mouth of the womb. This is indicated by cutting pains felt mostly in the back, contractions taking place in the womb only, and gradually growing more and more frequent until the neck of the womb is fully dilated.

2. Expulsion of the child, by means of stronger contractions in which the abdominal muscles contract, as well as the uterus.

3. The expulsion of the after-birth.

The average length of labor in women who have previously borne children is about six hours, the first four of which are occupied in the first stage, and the latter two in the second stage. The after-birth is often expelled at once after the expulsion of the child, but is more often retained five to thirty minutes.

The first and second stages of labor are often considerably prolonged. Some women, especially those who have broad hips and are well adapted to childbirth, pass through the process of labor in a much shorter space of time, in some cases not more than thirty minutes or an hour being occupied. In women who have not borne children before, especially those who are somewhat advanced in life, labor is often very greatly prolonged.

Various obstacles frequently arise to delay the process; such as inactivity of the womb, rigidity of

the neck of the womb or of the perinæum, contracted pelvis, and malpositions of the child.

Simple minded, primitive people, in a savage state, by the study of nature have in all parts of the world arrived at the discovery of very much the same means for facilitating the painful processes of childbirth. The most important of all these natural methods is massage, which is almost universally practiced, not only by the Chinese, among whom it seems to have originated, under the name of *Cong-fou*, but by their neighbors, the Siamese and Japanese, being termed by the latter *Ambouk*. Our own native tribes, the North American Indians, as well as the aboriginal inhabitants of Mexico, and the Pueblos, also practice methodically a sort of massage, the purpose of which is to assist nature in bringing into the world the new being. The natives of Africa, India, the South-Sea Islands, and the savage tribes of Central Asia, all employ certain modifications of the same art peculiar to themselves, some of which, however, are so rude and violent as to be, apparently, dangerous to the life of both mother and child.

Some of the ancient and rude practices referred to have been in use among the lower classes of civilized nations, particularly the Welch and Dutch peasantry, and some of the older medical practitioners of the present day can recollect of meeting with relics of such methods among the earlier settlers of Kentucky and Ohio.

Massage, as referred to in this connection, has reference to various manipulations practiced upon the abdomen and back, the purpose of which is to expel

the child or the after-birth, to excite uterine contraction, or to correct malpositions. The exact mode of administering such manipulations will be described a little later. The object of this mention is to call attention to the fact that this one of the most recent additions to scientific obstetrical practice is almost as old as the race, and simply an adoption of what has been practiced by savages from time immemorial, with, of course, such improvements as civilized man with his greater intelligence is easily able to add.

Preparation for Labor.—The whole period of pregnancy should be a course of preparation for its termination; but in addition to the various measures previously described, special measures may be adopted at its very termination by which the pains and dangers of childbirth may be greatly lessened and the process expedited.

First we mention the vaginal douche. No better means is known for securing natural and ready dilatation of the neck of the womb at delivery than the hot water douche. It should be administered two or three times daily for the last week or two of pregnancy, and when the pains of childbirth begin, may be employed continuously for hours with benefit. It is one of the most effectual means of relieving the annoying, ineffectual pains of the first stage of labor. The temperature should not be over 110° F., and the patient should be placed in such a position as to make her as comfortable as possible. We have witnessed the most excellent results from this method, and can recommend it as well worth a trial, and cer-

tain to yield satisfactory results without any possible danger of doing harm.

Another important means of preparation is the employment of massage to the abdomen and loins. This should be practiced to some extent during the entire latter half of pregnancy; but during the last two or three weeks should be employed more assiduously. Properly applied, this measure is not capable of doing harm. By the aid of it, malpositions may be corrected, the abdominal muscles strengthened, and the patient prepared for the approaching crisis. It should be applied daily for thirty minutes to an hour, during the last two months of pregnancy.

The manipulation consists in rubbing and kneading the abdomen and loins very much after the fashion of kneading bread, care being taken not to make such violent movements as to endanger the child or to force it into a wrong position. There is really little danger of this, however, as the tendency of any manipulation of the abdomen, not purposely directed in a manner to reverse the position of the child, is to bring the head, or heaviest portion, into the lowest part of the abdomen.

Fomentations and friction with unguents applied to the perineum are also of undoubted utility in preparing this part for the extraordinary strain to which it is to be subjected. These measures should be employed two or three times a day, and for fifteen minutes to an hour at a time during the last two weeks of pregnancy.

Care should be taken to keep the bowels loose

and the kidneys acting freely. The diet should be especially simple. The usual amount of exercise should be taken, or as nearly so as possible, to the very day of confinement, unless there should be some complication contra-indicating exercise.

Management of Labor.—The first thing to be done at the beginning of labor is to secure the services of a competent attendant. The attendant should, if possible, be a thoroughly trained physician. This is a field in which woman as a physician can fill a very useful sphere. Under no circumstances, except in emergencies, should the important process of parturition be placed wholly in the hands of a midwife whose qualifications, such as she may possess, are wholly derived from experience at the bedside, no matter how large be the number of cases she may have attended. No one person could by practical experience alone in a life-time acquire all the knowledge necessary to meet the urgent emergencies which are liable to arise at any time in childbirth. The science and art of obstetrics have been developed by a very slow process; and as they exist at the present day, are the result of the combined experience of physicians during the last two thousand years. Thorough theoretical knowledge is indispensable as a foundation for practical skill.

As soon as the first labor pains make their appearance, the physician should be promptly notified, and also the nurse, if the latter is not already in readiness. The room in which the patient is to be confined should be a large, light, airy, and pleasant one. But few persons should be allowed to be pres-

ent, and these should be such as are desired by the patient, and no others.

So far as consistent, all her wishes should be complied with, so that she may be in as pleasant a state of mind as possible, and that no mental influence may present an obstacle to prevent the completion of the process in which her physical and nervous powers will be taxed to the uttermost. No remark of a discouraging nature should be uttered in the presence of the patient, but hope and confidence should be inspired.

During this stage the patient need not go to bed. In fact, it is better that she should sit up, as the sitting posture favors the progress of labor. This need not be required, however, if the patient prefers to be in bed. During this stage the patient should quietly allow nature to carry on the work without any attempt to hasten matters by "bearing down," as she may often be encouraged to do by ignorant friends. These voluntary efforts are of no consequence until the neck of the womb is fully dilated. The patient should be allowed to drink cold water or weak lemonade as freely as desired; but stimulants should not be given, as they will produce a feverish state of the system without giving any real strength. Hot teas are also better withheld. If the bowels have not moved freely, they should be relieved by a full enema.

During this stage, the bed should be made in readiness. The feather bed, if in use, should be removed and replaced by a moderately hard mattress covered by a sheet. Over this should be placed a

large rubber cloth three or four feet wide and six feet long. This should be covered with a comfortable, and a sheet placed over all.

At the beginning of the second stage the patient should go to bed, and her clothing should be drawn up under her arms so that it will not be soiled, the lower portion of the body being protected by a sheet or petticoat. The patient may lie on the left side or on the back. If the foetus is strongly inclined toward the right side, it is better for the patient to lie upon the left side. During the severe pains which characterize the second stage of labor, the back of the patient should be supported by firm pressure with the hand. The knees should be drawn up and fixed in such a position as to give them support during the pains. The nurse should take hold of the hand or wrist of the patient to give her an opportunity to make firm traction during the pain.

It is at this stage of labor that much can be done by an intelligent midwife or physician to facilitate the process of childbirth and to relieve the sufferings of the patient. Rubbing and manipulation of the muscles of the loins and thighs often afford great relief to the patient. In case the pains are inefficient, and hence the progress slow and the patient discouraged, friction should be made over the abdomen with the hand, gentle pressure being made above the uterus so as to press it down into the cavity of the pelvis; when there is considerable delay, what is known to physicians as "expression" should be employed. There are several modes of applying this useful measure, but the following, known as the

method of Kristeller, is the most simple and effective :—

The patient lying upon the back, the operator places his hands upon the abdomen in such a manner as to grasp the womb, as shown in Plate L, Fig. 1. First the abdominal walls should be gently rubbed against the uterus, then slight pressure should be made in a downward direction, care being taken to bring the womb exactly to the middle of the body so that its mouth may be brought in direct line with the middle of the pelvic canal. The pressure should be gradually increased for three or four seconds, and then gradually diminished, the whole time occupied by the pressure being five to eight seconds. The hand should be retained in position, and the pressure repeated at short intervals. During the early part of the second stage, the intervals between successive pressures should be two or three minutes; but as labor advances, it should be shortened to one or one-half minute.

The points of pressure should be changed occasionally, the force being brought to bear alternately upon the upper lateral portions of the uterus instead of constantly over the central portion.

The systematic application of this simple measure will in most cases obviate the use of the forceps, even in difficult labors, and in cases in which the forceps are required, it should always be used as a means of bringing the child within easy reach of the forceps and facilitating the extraction. In the first labors this method should always be employed, and by

means of it the tediousness of such cases may be wonderfully lessened.

In cases of breech or other abnormal presentation the method is also found most serviceable. It is vastly superior to ergot and all other medicinal means of exciting uterine contraction, and is free from the dangers well known to accompany the use of drugs for this purpose.

The most proper time for the application of "expression" is after the membranes have ruptured, when the os is well dilated and the external parts are becoming tense from the pressure of the head of the child. When the method becomes sufficiently well known to secure its general and thorough adoption, we doubt not that it will almost entirely replace the forceps, and thus save thousands of women from the pain and often serious injuries resulting from instrumental delivery.

The Mexican midwife practices "expression" by means of the feet. The patient is placed upon the floor, and the operator stands upon the abdomen, the heels being placed upon the stomach, and compression and friction applied to the womb with the toes. The midwives of several barbarous tribes employ essentially the same means by suspending the patient to a rope attached to the ceiling and a band passed beneath the arms, while the operator grasps her about the waist and with the pressure of her entire weight performs a stripping movement downward. Others strap about the waist a strong leather band, known among the Indians as a "squaw belt," the belt being tightened and drawn downward as the child advances.

In some instances the pregnant woman applies "expression" herself by pressing the body against the end of a thick stake driven into the ground obliquely. These methods, though effective, are much less so than the more scientific one employed by modern obstetricians, and are liable to result in injury to both mother and child.

In the intervals between the pains, if the patient is exhausted, she should be allowed to sleep, if possible, in order to recuperate her strength. When the face becomes hot and flushed, it should be bathed with cool water. As the termination of labor approaches, as indicated by the increasing severity and frequency of the pains which at this time often become almost continuous, a supply of hot water should be got in readiness, a large pailful being brought to the bedside, together with a large pan to be ready for use if necessary. A syphon syringe should also be filled with hot water and held ready for use. A bottle of camphor should be at hand, and a strong cord, made of silk or linen thread twisted and well waxed, with a pair of scissors, should be in readiness for prompt use.

As the head of the child presses severely upon the perinæum, the efforts of the patient should be restrained, to avoid rupture by giving the tissues time to dilate. Pressing back the back of the head and elevating the chin of the child by means of two fingers placed in the rectum, is the best means of preventing laceration of the perinæum.

As soon as the head passes out, the cord should be felt for, as it is sometimes wound around the

neck in such a way as to interrupt the circulation as the strain is brought to bear upon it. It also sometimes happens that knots are tied in it, which being tightened by the strain may cut off the supply of blood from the child too soon. If the body is not speedily expelled, the child may be withdrawn by making traction with the finger placed in the armpit.

During the delivery of the child the hand of the nurse or assistant should be kept upon the abdomen of the mother in such a way as to grasp the upper part of the womb, firm pressure being made for the purpose of securing contraction of the organ. This pressure should be kept up until the after-birth is expelled and the bandage applied. If the after-birth is not promptly expelled, and the uterine contractions seem to be suspended, friction should be made over the uterus; and after a few minutes, firm pressure should be applied, the womb being grasped in the manner shown in Fig. 1, Plate L. The pressure should be firm as can be borne by the mother without discomfort, and should be applied at brief intervals, every half minute at least, until the *placenta* is expelled, gentle traction being made upon the cord to assist its expulsion.

As soon as born, the child should be brought to the edge of the bed and carefully examined. Generally it at once utters a cry, which indicates that its lungs are filled with air. In case it does not cry, and breathes feebly, or only gasps, the hand should be dipped in cold water and placed upon its chest, or the chest may be slapped with the hand. This will generally be sufficient to start the respiration. If

the child is limp and pale, and makes no efforts whatever at respiration, it should be immediately inverted, being held with the head downward, and hot flannels should be wrapped about it. Efforts should be made to excite respiration by compressing the chest at intervals of a few seconds. Care should also be taken to see that the mouth is cleared of mucus, though this is not likely to be necessary unless the child has begun to breathe just as the head is being born and has drawn mucus into the throat. If the face has a purplish appearance, the child should be placed at once in a warm bath of a temperature of 105°, or as hot as can be safely used without injury to the skin, and cold water should be dashed upon the chest. Artificial respiration may also be employed at the same time. These measures should be continued for some time and should not be abandoned so long as any evidence whatever of the action of the heart can be obtained. Some cases are recorded in which infants have been resuscitated after apparent death for fully an hour.

As soon as it breathes freely or the cord has ceased to pulsate, the cord should be tied in two places; the first about two inches from the body, the other about three inches. The child should then be laid upon its side, not on the back, as the side position favors the escape of mucus from the throat. If there should be much rattling in the throat, indicating the presence of considerable mucus, the infant should be laid with its head downward and to one side, so as to allow the mucus to escape.

Washing and Dressing the Child.—If the birth is a premature one, having occurred before the infant was fully developed, the child will be smaller than usual and less well developed; its movements will be slight and feeble, its cry will be very faint, and the countenance will have a peculiarly old expression. Such a child requires extra care and warmth. It should be carefully wrapped in soft cotton. Very great care will be required in rearing it, as it will at first be too weak to nurse and must be fed with a spoon. It should not be washed and dressed for some hours, and should be kept very warm. Care should be taken in washing the child not to expose it to cold so as to produce blueness of the surface, as is often done. It should be recollected that the infant has all its life thus far been accustomed to a temperature of nearly 100°, and being wholly without protection when born, and keenly susceptible, it must suffer quite severely from cold. Another important fact is that the process of respiration is not completely carried on by the lungs for some days after birth, the skin performing a very important part of the work. When it becomes cold, it can no longer perform this extra function, and the blood of the child is quickly poisoned by the accumulation of carbonic acid and other effete products which should be eliminated.

The best plan for washing the child is to place it in a warm bath, the temperature of which is about blood heat, and then rub it gently with a sponge dipped in warm, weak suds made of castile soap. If the surface is covered with curd-like matter, as is sometimes the case, it should be smeared with a mixt-

ure of equal parts of egg and sweet oil beaten up together. After the bath, the surface should be anointed with a little olive-oil or vaseline. If some portions of the curdy matter seem to be firmly adherent to the skin, no violent efforts should be made to remove them, as they will dry up and disappear in a short time without further attention. After being thoroughly washed, the child should be carefully examined to see that it possesses no deformity. The outlets of the body should receive particular attention, as in some cases the anus or urethra are closed.

The best method of dressing the cord is this: Grasp the cord with the thumb and finger close to the body, cutting it off at the ligature. Squeeze out all its contents by pressure with the thumb and finger of the other hand, keeping a firm grasp upon it with the thumb and finger first applied so as to prevent hemorrhage. Now apply another ligature about an inch from the end of the stump. By this means the cord will be very greatly reduced in size and may be much more easily dressed than when treated in the usual way. In dressing, apply a soft, thin muslin bandage, about as wide as the first joint of the thumb, wrapping it around the cord three or four times. Now apply another ligature outside of the bandage, and the dressing is complete. Some prefer to apply for a bandage a soft linen cloth four or five inches square, smeared upon the under surface with mutton tallow, and having a hole in the center through which the cord is slipped. The cloth is generally scorched, but not much is gained by this practice.

By dressing the cord in this way, much offensiveness which arises from decomposition is avoided.

It is generally customary to next apply what is termed the belly-band. This is not so important as many suppose, if indeed it is needed at all, which we very seriously doubt. If applied it should not be drawn too tight, and should be fastened with tapes instead of pins. The best material to use is very soft flannel. When the dressing is completed, the infant should be placed in a warm bed; but it should not have its head covered, as it needs an abundance of air, as well as an adult. The infant, when thus properly dressed, generally sleeps several hours. When it awakes, it should be applied to the breast. Although the milk is not yet formed, the efforts of the child to nurse will promote the secretion and will also benefit the child, as the first secretion furnished by the breast, a watery fluid known as *colostrum*, has a slightly laxative effect upon the bowels of the infant, freeing them from their contents, which is termed *meconium*.

The Binder.—After the child has been born and its immediate wants attended to, the binder or abdominal bandage should be applied to the mother. The binder consists of a double thickness of strong muslin cloth or a large linen towel. It should be applied in such a way as to give the mother the least possible amount of inconvenience in the application. In fastening, it should be drawn so as to fit the body snugly, and should be pinned from above downward. The bandage is generally applied more tightly than is necessary, the serious consequence of which is not

infrequently prolapsus of the womb. In case there is any marked tendency to hemorrhage after the birth, a folded towel should be laid over the womb beneath the bandage. The use of the binder is now by no means so universally recommended as formerly. It is probable that it may be dispensed with in most cases with no danger and with real advantage. It need not be worn after the first day or two; but a bandage should be worn for a few days after the mother first begins to walk about.

The soiled clothing should next be removed. The patient should be washed and wiped dry, and a dry, clean sheet with old cloths for absorbing the discharges should be placed beneath the patient. Care should be taken that the patient is warmly covered. A slight shivering will often occur, but this is generally from nervousness. If the patient has lost much blood, or is very weak, the head should be placed low; only a very small pillow or none at all should be used.

The patient should now be allowed to rest. Simple drinks may be given when desired, but stimulants are rarely called for. The patient will generally fall asleep if allowed to do so, and will awake after two or three hours very much refreshed. Food may be taken at regular times, but should be simple and unstimulating. Milk, toast, oatmeal porridge, and occasionally soft-boiled eggs, should constitute the chief diet. Beefsteak and other meats are better avoided.

Attention should be given to the bowels and bladder. If the bowels do not move by the second day, an enema should be administered. Either tepid wa-

ter or flaxseed tea may be employed. The bladder should be emptied within a few hours after labor. If there is inability to urinate, a warm fomentation may be applied over the bladder between the thighs, or a warm vaginal douche administered. This will usually bring relief, especially the latter measure, the patient being directed to urinate while the douche is being given. If these simple measures do not succeed, it will be necessary to use a catheter. The bladder should be relieved at least two or three times a day.

During the first twenty-four hours after childbirth, the nurse should carefully examine the condition of the womb by placing the hand upon the abdomen, every two or three hours. If the organ is found contracted down to a proper size and firm, all is well; but if it is appreciably enlarged and soft, or large and tense, friction should be at once applied and kept up until firm contractions are induced.

For the first day, the discharge from the womb is of a bloody character; after this, it gradually becomes watery, and in from three to five days it becomes thicker. This is termed the *lochial* discharge, and generally continues from one to three weeks. It is often checked for a day or two at the time when the milk secretion begins. In order to prevent the discharge from becoming offensive, as is sometimes the case, the vaginal douche should be taken at least twice a day; and when the discharge is very profuse, more frequently. The water employed should be quite warm, and should contain a teaspoonful of carbolic acid dissolved in a tablespoonful of glycerine or alcohol to the quart of water. The injection of hot

water not only cleanses the parts, but stimulates complete contraction of the tissues, and thus prevents danger from hemorrhage, and hastens the process by which the organ returns to its natural size. A solution of permanganate of potash in the proportion of a teaspoonful of the crystals to a quart of water, is also an excellent injection for use when the discharge is offensive. The carbolic acid solution should be thoroughly shaken before it is used. When blood reappears in the discharges after a few days, it is an indication that the process referred to is not taking place regularly and satisfactorily. This is generally the result of the patient's getting up too soon.

Milk Fever.—This is a term applied to the feverishness which is sometimes present on the third day after confinement. The fever may be introduced by a slight chilliness. The patient has thirst, headache, and frequent pulse. The breasts are generally somewhat swollen, harder than natural, and sensitive; throbbing and darting pains are sometimes felt in them. It is probable that the fever is not the result of the milk secretion, but is due to the absorption of decomposing discharges through the raw surfaces of the vagina and womb, and the swelling and tenderness of the breasts is due to the fever. The thorough use of disinfectant injections will generally prevent the occurrence of this fever. Placing the child to the breast soon after its birth, and at regular intervals afterward, is also an excellent means of prevention, as it not only empties the breast and promotes the natural secretion, but also stimulates contraction of the womb, and thus hastens the process of *involution*.

The inability of a mother to nurse her child is almost as great a misfortune to herself as to the child, as nature requires this natural stimulus to uterine contraction to enable her to do her work in reducing the womb to its natural condition after childbirth. The treatment at this time should consist in giving the patient little fluid to drink, feeding her chiefly with solid food, and quenching the thirst by means of pieces of ice. Hot fomentations should be applied to the breasts, and they should be emptied by means of careful manipulations, unless the child is able to withdraw the secretion by nursing. Sometimes the swelling is so great that the nipple is partly buried, thus interfering with the nursing. In this case the breast-pump should be employed to draw out the nipple, in case it cannot be drawn out by manipulation with the hands, which is by far the best means, or a nipple shield with a rubber teat should be employed. In case of necessity, an adult may act as a substitute for the child, or a young pup may be employed. When the breasts have been properly cared for during pregnancy, such troubles as this very rarely occur.

Care of the Breasts.—Care should be taken to wash the nipples carefully with cold water both before and after nursing. If the breasts are large, flabby, and pendulous, it is well to support them by means of bandages properly applied, passing under the breasts and over the neck. This precaution will often prevent inflammation of the breasts.

The friction and massage to which the nipple should be subjected during the months of pregnancy,

will so effectually harden and toughen its covering of skin as to render it able to stand the hardest usage during a prolonged period of nursing. In applying massage to the nipple, press back the areola with the forefinger until the nipple becomes prominent, then seize it, and draw it forward in imitation of the action of the child in nursing, at the same time pinching and rolling it between the thumb and finger. Pressing and rolling the breast between the hands is also a useful means for preparing the gland for use, and for increasing its activity when there is deficient secretion. The same method may be employed for the purpose of drawing forward the retracted nipple of a nursing mother.

Sore Nipples will rarely occur when these precautions are observed. If the nipple should become cracked and tender, especial attention should be given to cleansing, both before and after nursing, and an ointment of carbolated vaseline, ten drops to an ounce, should be used, care being taken to remove the ointment before the nipple is given to the child. A solution of tannin in glycerine, fifteen grains to the ounce, is also an excellent application for sore nipples. It should be used twice a day, after the nipples have been well cleansed.

Another excellent remedy is the following lotion, which should be applied twice a day with a camel's-hair brush: Carbolic acid twenty drops, glycerine two teaspoonfuls, water a tablespoonful and a half; mix thoroughly. Several other excellent prescriptions for sore nipples are given in the appendix.

Care should also be taken to give the nipple as

much rest as possible, by using the breasts alternately, and making the intervals between nursing as long as possible without doing injury to the child. One of the greatest causes of sore nipples is compression of the breast by improper dressing before and during pregnancy. In some cases, severe pain may be felt whenever the child is taken to the breast, in consequence of neuralgia of the part. This should be carefully distinguished from soreness of the nipple by a critical examination of the breast.

Inflammation of the Breast.—If swelling of the breast occurs, accompanied by redness, pain, and tenderness, it should be given entire rest at once. Hot fomentations should be applied to relieve the pain. The fomentations should not be simply warm, but they should be as hot as can be borne. If relief is not obtained in this way, ice-compresses or an ice-pack should be used continuously until the symptoms disappear. It is well to remove the ice-pack or ice-bag for a few minutes every two or three hours, applying a hot fomentation.

By a vigorous application of these measures, an inflammation may often be cut short in its course. It is very important that the first indication of inflammation should be detected. When this is done, the continuous application of cold and complete emptying of the gland by manipulation will usually control the inflammatory tendency. Rubbing of the breast is also an excellent means of producing absorption of inflammatory products.

After the inflammation is controlled, the breast should be carefully kneaded in such a manner as to

thoroughly remove the partially coagulated milk certain to be present. A failure to do this is one of the chief causes of the formation of abscesses. The common use of the breast pump is objectionable as a means of emptying the breast. By its use, violence is frequently done to the delicate tissues, so that actual harm is done, sometimes leading to permanent injury. By patient and well directed efforts, the breast can be emptied by manipulation in almost every case, so that the pump need be resorted to but rarely. The following is the best method of emptying the breast by this means :—

The nurse should seat herself beside the patient so that the left forearm rests lightly on the chest. Place the right hand beneath the breast in such a manner as to support it, allowing it to rest in the crotch formed by the thumb and the first finger. Now with the fingers of the left hand, sweep from the upper and left border of the breast toward the nipple with gentle, gradually increasing pressure. Occasionally raise the breast from the chest and roll it between the palms ; after ten or fifteen minutes thus spent in alternate stroking and rolling of the breast, it will become softer and much less nodular, and a drop or two of milk may be squeezed out. Both hands should now be used, the left being employed in the same way as the right, one lifting and supporting the breast, and the other stroking as described, the action of lifting and stroking being alternately performed by the two hands. By this means the milk will be pressed out of the gland into the milk sinuses around the nipple. When this becomes distended, the

nipple is to be milked in the same manner as the teat of a cow. After the secretion is once started, the breast may be emptied very rapidly. If there is only a slight obstruction, a few skillful strokes of the hand will overcome it; but when more serious, persevering but always gentle efforts must be made.

A little olive-oil, vaseline, or other unguent should be used to facilitate the manipulation and prevent irritating friction of the skin. A breast threatened with inflammation should be emptied by this means every few hours, as the inflammatory action can be much more readily controlled in an empty breast than in one distended with milk.

Inflammation of the breast most usually occurs in the third or fourth week after delivery. The usual exciting causes are neglect to properly empty the breast on account of a sore nipple, "a cold," neglect of the bowels, too rich food, or some similar infraction of the laws of hygiene relating to the nursing period.

A breast subject to inflammation should be made to rest functionally, if possible. It is not always easy to stop the flow of the milk, but something can be done by pressure. A firm bandage should be applied about the breast, and constant pressure should be employed. Dried sponge is very useful for this purpose. A large sponge should be moistened and then dried under pressure so as to flatten it. A hole should be cut in the middle so as to prevent pressure upon the nipple and to allow the milk to be pressed out. This should be bound over the breast, being exchanged in five or six hours for another sponge prepared in the same manner, thus maintaining the pressure almost

without intermission, if need be for days. By this means the blood supply is lessened, and so the secretion is diminished.

The application of adhesive straps is also a useful means of applying pressure, although by no means equal to the compressed sponge.

If the breast becomes tense, hard, shiny, and discolored, an abscess is forming or has formed, and should be at once opened so as to prevent burrowing and absorption of pus. This is of course the duty of the physician, and the exact mode of procedure need not be further described.

It should be remarked by way of caution that the prolonged use of poultices or fomentations should be avoided, as they often produce a sodden and relaxed condition of the breast.

To Check the Secretion of Milk.—In some cases it becomes desirable that the secretion of milk should be checked. This is especially important in cases of still-birth and the sudden death of the child. The most effective measures for checking the secretion of milk is to require the patient to abstain from the use of fluids of any sort, and the application of pressure. The food should be of a solid character. The thirst may be relieved by taking small quantities of ice. This should be continued until the fourth or fifth day, when there will usually be no further difficulty. The breasts should be partially relieved of their contents by manipulation, as already described, or by the breast pump if necessary, but should not be entirely emptied. The application of compressed sponge as described in a previous paragraph is one of the best of

all known means of rapidly drying up the secretion. The application of the ice-pack or cold compresses to the breasts, is also an excellent means for diminishing the secretion. It is also a good plan to apply to the breasts two or three times a day a mixture of equal parts of sweet-oil and spirits of camphor, and to keep the breasts constantly covered with a cloth saturated with spirits of camphor.

Galactorrhœa.—Sometimes the secretion of milk is too profuse, the secretion being in consequence poor in quality, and so affording insufficient nourishment to the child while draining the system of the mother. The remedial measures to be employed are the same as those mentioned as useful “to check the secretion of milk.”

To Promote the Secretion of Milk.—This must be accomplished chiefly by regulation of the diet and attention to the general health, especially to the improvement of the digestion. The patient should make free use of liquid food, particularly fresh milk, sweet cream, oatmeal porridge, graham gruel, and other whole-grain preparations. Teas of various kinds are of little consequence and do not increase the quantity of milk except by the addition of water. The use of wine, beer, ale, and other alcoholic stimulants is a practice to be in the highest degree condemned, as it not only deteriorates the quality of milk, but makes the child liable to various diseases. An eminent physician declares that in many instances in which beer and ale are used, the infant is not sober a moment from the time it begins nursing until it is weaned.

Gentle manipulation of the breast and nipple, as previously described, is in many cases very efficacious in promoting the secretion of milk. By this means, the secretion has been produced in women who have never borne children, in such a quantity as to enable them to act as wet-nurses with entire success.

Getting Up.—No definite time can be set at which it would be safe for every woman "to get up." Some are as able to get up in three or four days as others at the end of two weeks. The traditional "nine days for lying in" has no substantial foundation. As a general rule, the woman should remain recumbent in bed for a week or ten days. If she has been getting along nicely, she may be permitted to sit up a few minutes after the fourth or fifth day while the bed is being changed and aired; but if the lochial discharge becomes bloody after being up, it is an indication that she should remain in bed some time longer.

Getting up too soon after confinement is a frequent cause of some of the most troublesome chronic ailments from which women suffer. The worst of these is enlargement of the womb, due to *sub-involution*, a condition in which the organ fails to return to its natural size, remaining permanently enlarged. When everything progresses well, this process generally takes place in six or eight weeks. During this time the patient should exercise very great care to avoid exposure of any kind. Getting the feet wet, being chilled, overexertion of any kind, either mental or physical, and anything which has a prostrating effect, will be likely to check the natural retrograde process,

the prompt and thorough performance of which is very important. Special care should be taken so long as the lochial discharge is still present. Care during this period will often save the patient from many years of suffering.

Hemorrhage after Labor.—Sometimes the womb does not contract so firmly as it should after childbirth, in consequence of which its greatly dilated blood-vessels remain open, and frightful hemorrhage is the result. This is also sometimes caused by only partial separation of the after-birth, the remainder of the after-birth being attached so firmly that it cannot be expelled by the contractions of the organ. In other cases more or less hemorrhage continues for some time after childbirth in consequence of a laceration or tear of the neck of the womb.

Treatment: When the hemorrhage is due to partial attachment of the placenta, the after-birth should be removed as quickly as possible. In order to effect this, it is sometimes necessary for the physician to pass his hand into the womb. The necessity for this measure may almost always be obviated by the employment of the hot water douche at as high a temperature as can be borne by the patient, and by the employment of "expression," described on page 452. When the directions there given are followed out, hemorrhage after labor will rarely occur.

Where hemorrhage is due to failure of the uterus to contract, the best remedy known is the hot water douche and massage or friction over the womb. The syphon syringe, or some other efficient instrument of the kind should be in readiness for use in an emergency

of this sort. The water employed should be as hot as can be used without burning the tissues, or giving great discomfort to the patient, which will usually be at a temperature of about 110° to 120° F. These means combined will seldom fail. Uterine contraction may also be stimulated by alternate hot and cold applications to the abdomen over the womb and to the breast.

Care should be taken by the nurse to examine the patient frequently after childbirth to see that there is no unusual hemorrhage.

Inactivity of the Womb.—When labor is delayed in any of its stages in consequence of failure of the uterus to contract with sufficient vigor, it is necessary to adopt means for the purpose of stimulating the contractions. Among the various simple measures which may be employed with advantage are the application of cold water to the breast and over the abdomen. Sometimes alternate hot and cold applications are more effective than cold alone. Sometimes the inactivity is due to exhaustion, and rest is needed. In such cases the patient should be allowed to sleep, if possible, and should be given food. The most important and effective of all measures is massage or “expression.”

The hot vaginal douche should also be employed, and faradic electricity may be in some cases used with advantage. When the last-named agent is employed, the positive pole should be applied to the back and the negative over the womb.

Retention of the After-birth.—As remarked in the preceding paragraph, hemorrhage sometimes oc-

ours in consequence of failure of the uterus to contract properly after the child has been born, or in consequence of an unusually firm attachment of the placenta to the internal walls of the uterus. When the uterine contractions suddenly cease after the child is born, so that the placenta is not expelled, the remedies suggested for inactivity of the womb should be applied. In case these are not effective, it becomes necessary for the physician to pass two or more fingers into the womb, and by gradually working them under the placenta, loosen it and bring it away. This is a painful procedure, and should not be resorted to until a very thorough trial of other means has been made.

Rigidity of the Womb.—In some cases labor is delayed by a failure of the neck or mouth of the womb to dilate with sufficient rapidity. This is sometimes due to an early rupture of the membranes, in consequence of which the “bag of waters,” which precedes the child as it passes downward, does not perform its usual and important function of dilatation. It is also sometimes due to an unnatural condition of the tissues of the neck of the womb. In these cases the pains are very severe and acute, being felt mostly in the sacrum. The patient is feverish and very restless, the pulse becomes very frequent, and the patient suffers great distress. By internal examination, the os, or mouth, of the womb is felt like a hard ring.

The best remedies for this condition are the hot sitz bath and hot vaginal douche. They may be continued for several hours if necessary without det-

riment. Large, hot enemata are also very useful in this condition. They should be retained as long as possible.

Rigidity of the Perinæum.—In this condition, the perinæum, or portion of the tissue between the vagina and rectum, does not dilate as it should, but the central portion bulges forward while the upper edge remains hard and unyielding. This is the most frequent cause of rupture of the perinæum. The best remedies are the hot sitz bath and hot fomentations to the parts. A very excellent way of applying moist heat is by means of a large sponge dipped in hot water, and applied as hot as can be borne. The hot-water douche and the hot enema are remedies of very great value. The employment of daily sitz baths during the later months of pregnancy, and of daily massage of the part are the most reliable means of preventing this complication.

After-Pains.—In some cases, contractions of the uterus continue for a longer or shorter period after labor is completed. When these contractions are so severe as to give the patient great discomfort, hot fomentations should be applied over the abdomen. The hot vaginal douche is also an excellent means of relieving after-pains by producing firm contraction of the womb. Friction over the womb is also a useful measure for these cases by securing thorough contraction of the uterine muscles.

The Use of Ergot.—This drug, once very popular, indeed thought to be almost indispensable in all cases of childbirth, is now charged by many of the most eminent obstetricians with being the cause of

much increase of suffering during childbirth, and serious subsequent disease. It has often been the cause of ruptures of the neck of the womb and of the perinæum by producing too rapid labor. If used at all, it should be only after the delivery of the head, and it is probable that its use can be dispensed with in most, if not all, cases, without detriment to any, and with benefit to many. As elsewhere remarked, the proper employment of massage and "expression" obviates the use of ergot even in those cases in which it has long been considered indispensable.

The Use of Anæsthetics.—The employment of anæsthetics in childbirth is a practice of very recent date. When it was first introduced, many fears were expressed that harm would result to either mother or child, or both. Some opposed the measure on moral grounds, claiming that the pains of childbirth were part of the curse pronounced upon Eve, and that the use of anæsthetics for the purpose of mitigating the pain was preventing the execution of the penalty. Notwithstanding the opposition, however, some form of anæsthetic, generally chloroform, is now very largely used, especially in prolonged and unusually painful labors. If the patient is strong and vigorous, and the labor is not unusually severe, there is no occasion for the use of the anæsthetic; but if the contrary of this is true, there is no question but that benefit, as well as comfort, may be derived from the judicious use of chloroform. It is unnecessary to produce profound anæsthesia, or to bring the patient fully under the influence of the drug, and hence there is little or no danger of immediate injury to the pa-

tient. Neither have those opposed to the use of chloroform been able to show that injury results to the child. It should never be used, however, without the advice and constant supervision of the physician. When the proper preparatory treatment has been carefully employed during pregnancy, there will be little necessity for an anæsthetic.

Twins.—Twin pregnancy may be suspected when the mother is unusually large, or when there is a double appearance of the enlarged abdomen. Twin birth occurs in proportion of about one to seventy or eighty single births. The usual unpleasant symptoms which occur during pregnancy are greatly exaggerated in twin pregnancy. Complicated labors are also somewhat more frequent in twin births. The birth of the second child generally succeeds that of the first very quickly, but cases have been observed in which several hours and even days have elapsed before the birth of the second child.

Abdominal Pregnancy.—It sometimes happens that the impregnated ovum finds its way into the abdominal cavity and there undergoes development; fortunately, occurrences of this kind are very rare. In many cases, the foetus becomes surrounded with a cyst, by means of which it is separated from the rest of the body, and sometimes may be thus preserved for years in a degenerated condition. In other cases, the different portions of the foetus gradually work out through the bowels, or even through the abdominal wall. In still other cases, decomposition and suppuration take place, the system becomes infected with the products of decomposition, and the patient

dies of blood poisoning. Cases have occurred in which, by the performance of a surgical operation, a fully developed child has been removed from the abdominal cavity, the lives of both mother and infant being saved.

Puerperal Fever.—This disease is responsible for a large number of deaths following confinement, and a great multitude of chronic, diseased conditions, by which women who have suffered from it are crippled and maimed, many times for life. It is now pretty generally conceded that severe fever following confinement is usually the result of absorption into the system of some of the products of the decomposition taking place in the generative passages. Having gained access to the blood, the diseased germs multiply in great numbers and soon pervade the whole system. In addition to the general fever, inflammations of the womb or its surrounding tissues and the ovary and other organs are very likely to occur, leaving adhesions, consolidations, abscesses, indurations, etc.

The best treatment of this disease is prevention. If the parts are thoroughly washed out two or three times a day with a disinfectant lotion, by means of a syphon syringe, the thorough cleansing being kept up continuously until the lochial discharge has entirely ceased, there is little chance for the germs of disease to find an entrance into the system, and puerperal fever will not be likely to occur. A physician attending one case of the disease will be very likely to convey it to other patients whom he may visit, unless he takes great care to disinfect his person and clothing.

The fever should be treated on the general principles which govern the treatment of fever in other diseases.

Such cases as this require the services of a skillful and experienced physician, and the most careful nursing.

Lacerations of the Womb and Perinæum.—The long continuance of a bloody discharge after confinement is ground for suspicion that the neck of the womb has been torn, and the matter should at once receive attention.

After every confinement a careful examination should be made to ascertain whether there has been a tear of the perinæum or any other serious injury to the soft parts of the mother. The neglect of this precaution has left thousands of women to suffer a life-time from a long train of painful ailments which might have been easily prevented by the immediate performance of an operation to restore the torn parts. The old adage, "A stitch in time saves nine," is in no case more applicable than in these.

Phlegmasia Dolens — *Milk-leg.*—This painful complication of parturition usually appears about ten days after childbirth, being ushered in by chills, headache, mental depression, heaviness in the bowels, general uneasiness, feverishness, and a quickened pulse. These symptoms are speedily followed by pain in the groin of the affected side, extending down the limb. Very soon the whole limb becomes hot, swollen, white, and shining. The patient is exceedingly restless and uneasy, and suffers much. There is complete loss of power in the limb. The flesh yields to the finger, but does not "pit" on pressure. The

swelling usually begins at the body and extends downward, but sometimes the reverse is the case.

Nothing positive is known respecting the cause of this disease, except that it is most likely to occur in debilitated patients, especially those who have suffered from severe hemorrhage. It is probable also that lacerations of the neck of the womb and of the perinæum favor the occurrence of the disease by affording an easy channel for entrance of germs and septic matter into the system. It has been observed that the disease is most likely to occur in the left leg, and that it is more frequent in women who have previously borne children than in those who are mothers for the first time. Undoubtedly there is, during the disease, closure of the veins and lymphatic vessels.

Treatment: At the very beginning of the attack, the affected limb should be elevated, the calf being supported by a soft cushion by which it will be raised at least a foot above the level of the bed. During the first stages of the disease, hot fomentations and hot sponging of the limb and painful parts should be applied almost constantly. By this means the pain is relieved and the circulation restored at an earlier date than would otherwise be the case. The fever should be relieved by cool sponging, the cool enema frequently repeated, and cool compresses over the bowels. The diet should be light but nutritious, as milk, gruels, beef tea, toast, etc. The bowels should be kept open by the warm water enema, to which may be added, if necessary, a tablespoonful of glycerine or a little soap.

Relief from pain will often be given by rubbing of

the limb with sweet-oil or vaseline, the rubbing always being in an upward direction, and very gentle. After a few days, the tissues become softer, and when pressed by the finger, show a depression which remains for some minutes,—a symptom known as “pitting.” This indicates that the lymphatic channels are being opened up, and the treatment should now be changed. The limbs should be daily rubbed upward with firm pressure by the hand, beginning at the toes and grasping the whole circumference of the limb, or as nearly so as possible. This should be repeated three or four times a day, and should be continued fifteen to twenty minutes at a time. During the intervals the limb should be bandaged by a rubber or flannel bandage, which should be applied evenly and firmly, from the toes to the thigh, and without so great pressure as to give pain. Alternate hot and cold sponging of the limb and friction with the hand are also valuable measures of treatment. The patient should be kept quiet in bed until all evidence of active disease has disappeared. The bandage should be worn so long as there is any swelling or bloating.

The effects of the disease sometimes persist for a long time. Patients complain of a “wooden feel” which often lasts for months, and sometimes even years, although the attack itself seldom lasts more than two or three weeks. Sometimes a permanent enlargement remains. Fortunately, the disease is not dangerous, and one attack does not seem to increase the liability to the disorder to any great degree, and indeed, second attacks seem to be less severe than first ones. One of the most unpleasant features of

the malady is its liability to appear in the limb of the opposite side when the limb first attacked is beginning to recover.

Puerperal Mania.—This form of mental disease is most apt to show itself about two weeks after delivery. Although, fortunately, of not very frequent occurrence, it is a most serious disorder when it does occur, and hence we may with propriety introduce the following somewhat lengthy, but most graphic description of the disease from the pen of Dr. Rambotham, an eminent English physician :—

“In mania there is almost always, at the very commencement, a troubled, agitated, and hurried manner, a restless eye, an unnaturally anxious, suspicious, and unpleasing expression of face ;—sometimes it is pallid, at others more flushed than usual ;—an unaccustomed irritability of temper, and impatience of control or contradiction ; a vacillation of purpose, or loss of memory ; sometimes a rapid succession of contradictory orders are issued, or a paroxysm of excessive anger is excited about the merest trifle. Occasionally, one of the first indications will be a sullen obstinacy, or listlessness and stubborn silence. The patient lies on her back, and can by no means be persuaded to reply to the questions of her attendants, or she will repeat them, as an echo, until, all at once, without any apparent cause, she will break out into a torrent of language more or less incoherent, and her words will follow each other with surprising rapidity. These symptoms will sometimes show themselves rather suddenly, on the patient's awakening from a disturbed and unrefreshing sleep, or they may super-

vene more slowly when she has been harassed with wakefulness for three or four previous nights in succession, or perhaps ever since her delivery. She will very likely then become impressed with the idea that some evil has befallen her husband, or, what is still more usual, her child; that it is dead or stolen; and if it be brought to her, nothing can persuade her it is her own; she supposes it to belong to somebody else; or she will fancy that her husband is unfaithful to her, or that he and those about her have conspired to poison her. Those persons who are naturally the objects of her deepest and most devout affection, are regarded by her with jealousy, suspicion, and hatred. This is particularly remarkable with regard to her newly born infant; and I have known many instances where attempts have been made to destroy it when it has been incautiously left within her power. Sometimes, though rarely, may be observed a great anxiety regarding the termination of her own case, or a firm conviction that she is speedily about to die. I have observed upon occasions a constant movement of the lips, while the mouth was shut; or the patient is incessantly rubbing the inside of her lips with her fingers, or thrusting them far back into her mouth; and if questions are asked, particularly if she be desired to put out her tongue, she will often compress the lips forcibly together, as if with an obstinate determination of resistance. One peculiarity attending some cases of puerperal mania is the immorality and obscenity of the expressions uttered; they are often such, indeed, as to excite our astonishment that women in a respectable station of society

could ever have become acquainted with such language."

The insanity of childbirth differs from that of pregnancy in that in the latter cases the patient is almost always melancholy, while in the former there is active mania. Derangement of the digestive organs is a constant accompaniment of the disease.

If the patient has no previous or hereditary tendency to insanity, the prospect of a quite speedy recovery is good. The result is seldom immediately fatal, but the patient not infrequently remains in a condition of mental unsoundness for months or even years, and sometimes permanently.

Treatment: When there is reason to suspect a liability to puerperal mania from previous mental disease or from hereditary influence, much can be done to ward off an attack. Special attention must be paid to the digestive organs, which should be regulated by proper food and simple means to aid digestion. The tendency to sleeplessness must be combatted by careful nursing, light massage at night, rubbing of the spine, alternate hot and cold applications to the spine, cooling the head by cloths wrung out of cold water, and the use of the warm bath at bed time. These measures are often successful in securing sleep when all other measures fail.

The patient must be kept very quiet. Visitors, even if near relatives, must not be allowed when the patient is at all nervous or disturbed, and it is best to exclude nearly every one from the sick-room with the exception of the nurse, who should be a competent and experienced person.

When the attack has really begun, the patient must have the most vigilant watchcare, not being left alone for a moment. It is much better to care for the patient at home, when possible to do so efficiently, than to take her to an asylum.

When evidences of returning rationality appear, the greatest care must be exercised to prevent too great excitement. Sometimes a change of air, if the patient is sufficiently strong, physically, will at this period prove eminently beneficial. A visit from a dear friend will sometimes afford a needed stimulus to the dormant faculties. Such cases as these of course require intelligent medical supervision.

Pelvic Inflammations.—One of the most serious complications of childbirth is acute inflammation of the uterus or its surrounding tissues. The cause is usually exposure to draughts by which a cold is contracted, neglect to properly cleanse the parts by thorough disinfecting vaginal douches, two or three times a day, allowing the decomposing matters to be absorbed, getting up too soon, neglect to properly evacuate the bowels or bladder, and similar neglects to regard the hygiene of this period with proper care. It is one of the most serious of all the complications of the post-partum period, often leaving the patient a life-long sufferer from adhesions, chronic pelvic abscesses, and other local disorders.

The disease is usually ushered in with a chill. The temperature runs very high in a few hours, as indicated by the rapid pulse, hot, dry skin, and thirst, often accompanied by delirium. There is great local pain and tenderness, the patient can scarcely bear to

be stirred or touched, and can hardly endure the weight of the bed-clothes.

Treatment: Energetic measures must be adopted at once. Apply ice bags, or cloths wrung out of ice-water, every five or ten minutes, hot fomentations or hot bags to the spine, hot enemas, and cool sponging of the trunk of the body. The temperature must be lowered as soon as possible. If the cold applications over the seat of pain do not give relief from pain, hot fomentations must be applied every two or three hours for a half hour or more. The hot douche slightly tinged with permanganate of potash solution, must also be assiduously employed, being repeated at least every two or three hours, until the fever begins to diminish. A physician should be called.

MISPLACED AFTER-BIRTH.

The placenta, or after-birth, which properly develops at the upper part of the cavity of the womb, is sometimes attached in such a position as to cover the outlet of the organ. In such cases, known as "placenta previa," childbirth cannot take place without a frightful hemorrhage, which may be fatal if the condition is not understood beforehand. Hemorrhage may occur at any time after the earliest months, and the danger increases as pregnancy advances. A profuse flow of blood should warn the mother to go at once to bed and send for a physician. In the meantime the bleeding may be controlled by crowding a large sponge with a string attached into the vagina, and pressing it against the mouth of the womb.

THE DISEASES OF WOMEN.



HAT there has been in the last quarter of a century a most remarkable increase in the number and frequency of diseases of the class known as "female diseases," is a fact well attested by the observation of hundreds of physicians and other persons who have had wide opportunities for observation on this point. No one disputes the fact, but various interpretations have been given to it.

One author attributes the difficulty to faulty methods of education, particularly the attempt of young women to compete with their brothers in the study of the classics and the higher mathematics. Another, adducing the fact that American women seem to suffer more than those of any other nation, finds an explanation in the asserted fact that "all animals tend to deteriorate in this country." No reason is offered why America should not be as healthy a country as any other upon the globe, but attention is called to the fact that numerous classes of people have occupied the territory in succession, from which it is argued that no race can long continue an existence here without degeneration; thus placing the re-

sponsibility wholly upon nature and removing it from the shoulders of those who, according to our view, are only suffering the consequences of their own transgression of nature's laws, combined with inherited weaknesses and morbid tendencies.

During the last ten years our opportunities for studying this class of disorders has been very extensive, and we have carefully sought for the cause in each individual case of the thousands which have come under our care for treatment. Careful and prolonged consideration of the subject has convinced us that the increased frequency of diseases peculiar to the female sex are more directly attributable to bad habits of dress, diet, and unnatural and injurious personal and social habits of various sorts, than to any other causes. We cannot conceive it to be possible for a woman to dress in accordance with the requirements of fashion for any length of time, without becoming seriously diseased in the functions peculiar to her sex. This subject has already been considered at length in earlier portions of this work, and hence need not be dwelt upon here.

The fact above stated is recognized by the most eminent authorities among those who have made a specialty of the treatment of this class of maladies, as is evidenced by the following significant words from Prof. Emmett:—

“At the very dawn of womanhood the young girl begins to live an artificial life, utterly inconsistent with the normal development. The girl of the period is made a woman before her time by associating too much with her elders, and in diet, dress, habits, and

tastes, she becomes at an early age but a reflection of her elder sisters. She may have acquired every accomplishment, and yet will have been kept in ignorance of the simplest feature of her organization, and of the requirements for the preservation of her health. Her bloom is often as transient as that of the hot-house plant, where the flower has been forced by cultivation to an excess of development, by stunting the growth of its branches and limiting the spread of its roots. A girl is scarcely in her teens before custom requires a change in her dress. Her shoulder-straps and buttons are given up for a number of strings about her waist, and the additional weight of an increased length of skirt is added. She is unable to take the proper kind or necessary amount of exercise, even if she were not taught that it would be unlady-like to make the attempt. Her waist is drawn into a shape little adapted to accommodate the organs placed there, and as the abdominal and spinal muscles are seldom brought into play, they become atrophied. The viscera are thus compressed and displaced, and as the full play of the abdominal wall and the descent of the diaphragm are interfered with, the venous blood is hindered in its return to the heart."

Although mothers have been repeatedly warned of the danger of thus allowing their daughters to sap the very foundation of their life in early womanhood, it is rare indeed that a mother can be found who has the moral courage to stand up against the tide of public opinion and bravely refuse to bow to the mandates of fashion. Health, happiness, usefulness, comfort, are all sacrificed upon the throne of the fickle goddess

to whom so many thousands pay an onerous but willing homage. So long as this strangely inconsistent course is persisted in, woman will continue to be the chief supporter of the medical fraternity, whose skill and ingenuity are taxed to the utmost in devising means for the relief of her multitudinous and painful ills, at least three-fourths of which might be easily avoided by better attention to the laws which govern her sexual nature.

Although we cannot here enumerate all, or even a small part, of the causes which give rise to the various maladies to which women are especially liable, this portion of our subject having been quite fully considered elsewhere, we must again call attention to what is probably one of the most common of all the causes of uterine disease, viz., neglect to attend promptly to the call of nature for evacuation of the bowels and bladder. With many, perhaps we may say most, women, this neglect is habitual. The great majority of women, young, old, and middle-aged, suffer with constipation of the bowels. In a majority of cases this is largely the result of neglect. By degrees, the bowels lose their natural sensibility, and become torpid and inactive; the immediate result of this is congestion of all the organs of the pelvis, the uterus and ovaries with the rest, and sooner or later the symptoms of disease of these organs make their appearance. When the bladder is allowed to become distended, the body of the womb is crowded backward, while the neck of the organ is drawn forward, and thus retroversion and ultimately retroflexion is produced. The overdistended bladder becomes irritable,

and takes on serious inflammation. The severe efforts required to relieve the bowels in obstinate constipation, are productive of prolapsus and other displacements. Aside from this, the general health suffers from the retention of offensive material which should be carried out of the body promptly, but being retained, is absorbed, contaminating the blood, poisoning the nerve centers, and working general mischief.

One of the causes of this prevalent condition among women is deficient muscular exercise and a concentrated diet, the too free use of meat, pastry, and fine-flour bread. Oatmeal, cracked wheat, graham flour, and fruits, if more freely used, would obviate much of the suffering from this cause; but probably the most potent cause may be found in the inconvenient, often repulsive, we may even say indecent, and to a delicate or menstruating woman, actually dangerous closet accommodations provided for the use of the average family. In ancient times the apartments devoted to the relief of the bowels and bladder were dedicated to the beautiful goddess Cloacina, and were made convenient, comfortable, even attractive, and so stable in structure that they have withstood the blasts of many centuries. How different from the modern edifice devoted to the same purpose! Its structure is usually such as to make it in warm weather a noisome and loathsome place, and in winter scarcely an apology for protection from the snow and chilling blasts incident to the season. Its location is generally at some distance from the house, rarely sheltered from the gaze of the street, and approached by a neglected path surrounded with tall grass or weeds, insuring the

wetting of feet and ankles from rain or dew, and making it almost inaccessible when the ground is covered deep with snow. For a woman who is passing through her menstrual period to visit such a place is, in cold or rainy weather, certainly a dangerous proceeding. A visit at any time is to be dreaded, and hence is avoided as long as possible. In most parts of the country, particularly in the South and West, a neighboring shed, a clump of bushes, or the shelter of a rock, afford the only convenience for meeting the demands of nature for the performance of one of the most imperative and essential of the vital functions.

The remedy for this defect which we suggest, where the most improved form of water-closet cannot be employed, is the earth-closet. This need not be an expensive affair, although there are various patented devices which are as ornamental as useful, and fulfill all the requirements to be met. All the practical advantages to be gained from the earth-closet can be secured by an exceedingly small outlay. All that is really necessary is a properly constructed seat, under which should be placed a large galvanized pail or pan one-third filled with well-sifted coal ashes, or fine, dry clay or dust from the street. A supply of the same material should be at hand, with a small shovel ready for use, and after use of the closet, a shovelful should be added to the contents of the pail. The latter should be emptied and rinsed with a saturated solution of copperas, daily. With these precautions, such a closet may be placed anywhere in a house with perfect safety. A warm corner of the woodshed may be partitioned off to receive it, or a small room adjoin-

ing the house may be built on purpose for its accommodation. Warmth in cold weather, convenience at all times, and privacy of approach, are advantages which should be embodied in every case as essential means of maintaining the health, as well as ministering to the mental and physical comfort of the female members of the household.

Perpetual "dosing" must be set down as one of the causes which have been instrumental in making so conspicuous "the little health of women." This subject has also been considered elsewhere, but we think will bear mentioning again, so common is the custom and so serious its consequences. It must be conceded that homeopathy has been of most invaluable service to the world, at least to one-half of humanity, by demonstrating that this class of ailments, when curable, recover more rapidly without than with the constant dosing with pills and pellets and regulating powders, nauseating compounds and sickening decoctions. The treatment of the diseases of women as practiced to-day by the most experienced and scientific practitioners, more nearly approaches the ideal standard of rationality than any other branch of medicine, and the daily advances in this direction are greater than in any other department.

We should fail to do our duty should we neglect to endeavor to impress upon the minds of our readers the paramount importance of attending seriously and promptly to the first evidences of the maladies to which this section is devoted. Nearly all this class of diseases, although very chronic and obstinate when thoroughly developed, are readily controlled by proper

and efficient treatment at the outset. False modesty often restrains the sufferer from making known her condition to a competent medical adviser until it has existed so long that a cure can only be accomplished by long-continued and persevering efforts. When apprized of this fact, the unfortunate individual often gives up in discouragement. In too many instances, when this is not the case, the patient has the misfortune to fall into the hands of some physician, who blindly follows obsolete or routine methods of treatment, perhaps doing the best he knows how, but notwithstanding, in no way benefiting the patient, even after years of treatment.

The treatment of this class of diseases, or "female weaknesses," as they are termed by the advertising charlatan, is one of the most lucrative sources of revenue to quacks of every description. Not hesitating to promise the most marvelous results within a short space of time, they excite the hopes of their victims only to leave them deeper than ever in the slough of despond. A person who has been thus imposed upon a few times, is generally in about as wretched a condition, both physically and mentally, as an individual can well be. It is partly for the purpose of rendering sufferers from this class of diseases sufficiently intelligent upon the subject of their ailments to enable them to discriminate between the competent and reliable physician and the ignorant pretender, that this section is written. Another object in its preparation which we may mention in conclusion, is to inspire those of this large class of sufferers into whose hands this work may fall, with hope and courage, by the as-

surance that there are rational and successful methods of treatment which will reach almost every case, no matter how chronic nor how apparently hopeless it may be, provided they are skillfully adapted to each particular case and faithfully administered. Fortunately, also, most of the common ailments of women are curable by a very few and comparatively simple means in their earlier stages, before many complications have arisen, and these means are such as can be utilized at home, if a fair degree of interest and intelligence is enlisted in the effort. We have endeavored to point out in the appendix the measures of treatment best adapted to home treatment, and such as we have known to be successful in hundreds, we may even say thousands, of cases in which we have recommended their use.

We shall consider first and most fully those maladies which are most easily manageable by methods which can be employed at home, giving only brief space to the treatment of diseases which are not readily recognized by any but the skilled physician, and which demand his personal services in carrying out a course of treatment. Even in these cases, however, as every physician knows, that which the patient can do for herself at home, or can have done by a competent nurse, contributes more largely to the successful result than all other measures combined.

LEUCORRHOEA, OR WHITES.

This exceedingly common condition is usually a symptom of disease rather than an independent disorder; but it is so exceedingly common that it is proper

to describe its treatment independently. As a symptom, leucorrhœa is indicative of quite a variety of conditions. The discharge to which the term "whites" or "female weakness" is familiarly applied, varies considerably in character. A natural discharge of whitish mucus, the proper secretion of the vaginal mucous membrane, takes place for a short time just before and just after menstruation, and need occasion no concern; but when the discharge becomes continuous, not disappearing in the interval between the menstrual periods, it becomes a symptom of disease. A very profuse discharge naturally takes place also in the latter part of pregnancy.

In addition to the special causes mentioned, leucorrhœa may result from simple congestion of the blood-vessels of the vaginal mucous membrane due to improper dress. It may also be occasioned by taking cold, by sexual excess, and by indigestion or a debilitated state of the system.

The indication of leucorrhœa as a symptom depends largely upon the character of the discharge. Viscid mucous discharges are generally from the womb. Curdy mucous discharges are occasioned by catarrh of the vagina. Clear or turbid watery discharges, especially when very offensive in character, are indicative of tumors or malignant disease of the womb. Discharges containing pus are indicative of inflammation or ulceration; they may proceed from the vaginal mucous membrane or from the uterus. Reddish or bloody discharges accompany tumors of various kinds, cancer, and ulceration of the womb. Discharges of a very offensive character, especially when

occasionally mixed with blood, are indicative of the presence of malignant disease. Offensive discharges are not positive evidence of the presence of cancer, however, as they may arise from other causes.

Treatment: The first and most important measure of treatment is the hot vaginal douche (see appendix). In cases in which there is much irritation, soothing lotions may be applied, as linseed or slippery-elm tea, starch water, infusion of hops, one ounce to the pint of water, a solution of borax, one teaspoonful, powdered, to the pint of water, is also exceedingly useful in allaying the vaginal irritation and that of the labia, which frequently results from an acrid discharge.

When the disease is chronic, the discharge profuse, and the parts relaxed, astringents may be employed with benefit. The hot water douche should be made slightly astringent in character by the addition of powdered alum, tannin, and other mild astringents, or the astringent solution may be used after the usual hot water douche. Alum may be used in the proportion of a teaspoonful of powdered alum to a pint of water. Tannin may be used in proportion of one dram to a pint of water. When the discharge is offensive, a solution of permanganate of potash, in the proportion of ten grains to a pint of water, will generally be effective in correcting the feter.

The hot douche should be taken at least twice a day, for fifteen to twenty minutes at a time, the astringent application being made once a day. It is best to alternate in the use of astringents when they are used for a long time. Glycerine is also a most

useful measure, used alone or combined with astringents. The same may be said of a more recently discovered remedy, the extract of the *Eucalyptus globulus* or Australian gum-tree. For formula for these remedies, see the appendix.

The sitz or hip bath may be usefully employed in this as well as most other forms of local disease in women. The temperature of the bath should be 92° F., at the beginning, and after ten to twenty minutes should be cooled down from two to five degrees for about one minute, so that there will be no liability of the patient's taking cold. The bath may be taken daily if the patient is strong, or in other cases two to four times a week.

Still another measure of very great value in these cases is the medicated tampon, which is also described in the appendix. Alum, tannin, glycerine, and a variety of useful remedies may be applied in this manner, either with or without the aid of an instrument for placing the tampon, as described in the appendix.

VAGINITIS, OR INFLAMMATION OF THE VAGINA.

This disease is much less common than the preceding, one form of which is sometimes termed chronic vaginitis. In the acute form of the disease there is swelling, heat, tenderness, smarting, and a burning sensation, with a more or less profuse discharge. This form of the disease very closely resembles the specific form of the affection known as *gonorrhœa*, which usually results from impure connection.

In a somewhat rare variety of the disease the whole vaginal mucous membrane is covered with granulations, which render it exceedingly sensitive.

The causes of vaginitis are cold, irritating discharges from the womb, caustics, badly fitting supporters, self-abuse, and excessive coitus.

Treatment: An acute attack of vaginitis can generally be cured in ten days or two weeks by the employment of sitz baths, warm douches, three or four times a day, injections of starch water, and resting in bed. Other measures are seldom necessary. When the disease is chronic, longer time is required for a cure. Glycerine and tannin, in the proportion of one-half dram of the latter to one ounce of the former, is an excellent remedy in chronic vaginitis, to be applied to the affected part daily or every other day by means of cotton saturated with the solution. A solution of chlorate of potash, a dram to a half pint of water, is also a very useful remedy. Dr. Smith, of London, especially recommends a solution of half an ounce of alum and a dram of tannin to a quart of water, one half to be used at night and the other half in the morning, to be applied after the warm douche.

Gonorrhœa in females is to be treated upon essentially the same plan as vaginitis from any other cause.

VAGINISMUS.

The chief symptoms of this disease are pain in walking, and severe spasmodic pain due to contraction of the sphincter muscle of the vagina whenever the parts are touched or otherwise excited. This is often a very severe affection, being the occasion not

only of great inconvenience, but of intense mental as well as physical suffering. It consists in an unnaturally sensitive condition of the vagina, which causes violent spasmodic contraction of its walls from the slightest irritation. The chief causes are hysteria, inflammation of the vagina, excoriations of the mucous membrane, vascular tumors of the urethra, and fissure of the anus.

Treatment: The sitz bath, daily hot douche, and soothing lotions, such as infusion of hops, starch water, linseed tea, etc., should be first employed, and if unsuccessful, a most rigorous search should be made for the cause. Whatever this is, it must be removed. Often it consists in an irritable condition of the vagina, which must of course be cured first of all. In very obstinate cases, a surgical operation is necessary, and hence a physician should be consulted.

ITCHING OF GENITALS.

This is usually a very distressing complaint. It is characterized by an intense burning, itching, and tingling of the organs of generation. The seat of the itching varies, being sometimes confined to the external organs of generation, and sometimes involving the vaginal canal to a greater or less extent. The affection is sometimes purely nervous, but most commonly depends upon an acrid discharge, especially in the senile leucorrhœa of old age, which is characterized by a very acrid discharge from the womb. A serious form of the disease accompanies diabetes in women. The itching is so intense, the desire to scratch the person becomes uncontrollable and isolates

the sufferer from society, also occasioning loss of sleep and the greatest mental depression, sometimes even resulting in insanity.

Treatment: The disease is sometimes very obstinate, and requires persevering treatment. Try first, the hot vaginal douche. Bathe the external parts with hot water, hot as can be borne without pain, gently striking the parts with a sponge squeezed from the water. Bathing the parts with cider vinegar is also very useful as a means of relief in some cases. Injections of decoctions of slippery elm, sassafras pith, flax seed, quince seed, and starch or gum water are also useful means of soothing the irritation. When due to diabetes, the urine should be passed with a vaginal douche. If due to a uterine discharge, pledgets or tampons of cotton should be introduced into the vagina to absorb and arrest the secretion, and thus protect the diseased parts. If these remedies do not give relief, some one of the lotions given in the appendix may be tried.

INFLAMMATION OF THE LABIA.

This is a disagreeable and often painful ailment, most commonly caused by acrid discharges from the vagina or womb. Relief may usually be obtained by hot douches, sitz baths, and the application of lotions of borax, boracic acid, and carbolic acid, for which see appendix. When caused by acrid discharges, a cotton tampon should be placed in the vagina to prevent the discharge from constantly bathing the affected parts. The tampon should be dusted with powdered borax or boracic acid, tannin, iodoform,

camphor gum, or chloral. Sometimes diabetes acts as a cause, the urine keeping the parts in a state of irritation. In these cases the urine should be drawn with a catheter several times a day.

UTERINE CATARRH—ENDOMETRITIS.

General debility; pulse weak; countenance pale and sallow; digestion slow; bowels very inactive; eyes dull, surrounded by a dark circle; nervousness; headache; hysteria; weakness in the back and lower part of the bowels; watery or glary discharge, sometimes very copious, often appears in adhesive, stringy masses; scanty or suppressed menstruation; painful menstruation; menorrhagia; are the leading symptoms.

The mucous membrane lining the cavity of the uterus is subject to catarrh as well as all other mucous membranes of the body. This condition is generally termed, inflammation of the interior of the womb, and it has long been treated as such. It has recently been thoroughly demonstrated, however, that this is not the case, and that the condition of the mucous membrane lining the organ is that of congestion and not inflammation.

The most common causes are improper dress; taking cold at the menstrual period; sexual excess; self-abuse; and whatever may cause congestion of the womb. It occurs very frequently in women who for any reason do not nurse their children.

Treatment: All exciting causes, so far as possible, should be removed. If the patient has been in the habit of wearing the clothing tight about the waist

and suspended from the hips, and has neglected to clothe the lower extremities properly, these matters should receive immediate attention. The limbs should be thoroughly clad in flannel the greater portion of the year. The feet should be protected by thick woolen stockings and warm shoes. The clothing should be so loose as to remove all compression about the waist, and should be suspended from the shoulders by being buttoned to a waist, or by properly adjusted suspenders.

The diet of the patient should be nourishing but unstimulating. A large proportion of animal food is not advisable. Fruits and grains, with a moderate allowance of eggs and milk, constitute the best diet. Although excessive exercise, such as running, jumping, lifting, and horseback riding, is injurious, a considerable amount of daily gentle exercise in the open air is very important. The sexual system should have entire rest during the course of treatment. In many cases, married women suffering from uterine catarrh are barren. When pregnancy occurs, it is likely to be attended by a great number of complications, some of which are highly dangerous.

Careful attention should be given to the regulation of the bowels. A thorough movement should be secured daily, the enema being employed if necessary. In most cases, however, the inactivity of the bowels may be overcome by careful attention to diet, daily kneading of the bowels, and wearing the moist abdominal bandage at night. The local treatment of the disease consists chiefly in the employment of sitz baths and hot water douches. The sitz bath should

be taken daily, or at least every other day, as follows: Begin the bath at 95°; after five minutes, lower the temperature to 90°; after ten or fifteen minutes longer, the temperature should be lowered two or three degrees more, and the bath immediately concluded. A warm foot bath should be taken at the same time, at a temperature four or five degrees higher than that of the sitz bath.

The use of astringent injections, as of tannin, golden seal, etc., one or two drams to the quart of water, is also to be recommended; but the medicated tampon pledget is much to be preferred, especially the tannin and glycerine application. See appendix.

All of these measures must be steadily persisted in, not only until the slightest symptoms of the local disease have passed away, but for several weeks after, and for a few days after each menstrual period for several months. It is unnecessary to remark that the sitz bath or douche should be suspended during the menstrual period unless the disease has assumed such a form as to occasion painful menstruation, when the hot sitz bath may be necessary to give relief.

The injection of irritating lotions of various sorts into the cavity of the uterus,—a measure of treatment employed by some physicians,—is in our opinion a hazardous procedure and one that is rarely required. We have had occasion to see the ill effects of this mode of treatment in a number of cases. In a case which came under our care a few years ago the patient had recently been treated by an injection into the cavity of the womb of a strong solution of nitrate of silver. The immediate results were so serious

that the lady barely escaped with her life. We scarcely need add that the chronic congestion of the organ from which she had suffered many years was greatly aggravated in the inflammation which followed, in which not only the womb itself, but its surrounding tissues were involved. In this way an amount of damage is often done which can hardly be repaired by many months of treatment, and may occasion life-long injury.

INFLAMMATION OF THE WOMB.

The symptoms of this disease are almost identical with those of catarrh of the womb, but are much more intense. The local symptoms are chiefly, pain in the lower part of the back, extending around the body; weight, or dragging-down feeling in the bowels; pain just above the pubic bones, with tenderness on pressure; frequently, various symptoms relating to the bladder. In most cases there is more or less disturbance of digestion, leucorrhœa, constipation of the bowels, headache, nervousness, and general debility.

This disease, like the preceding one, has long been mistaken for an inflammation, which its name really implies, but which does not in reality exist. The condition commonly known as chronic inflammation of the uterus is really congestion of the organ. In consequence of disturbance of the circulation in the womb, it becomes engorged with blood and speedily becomes enlarged, sometimes reaching a size three or four times as large as in health. As the result of the enlargement and increased weight, the organ settles down in the pelvis and thus prolapsus or

falling of the womb is produced. Sometimes its increased weight tips it over forward, producing another form of displacement, known as anteversion. In other cases it tips backward against the rectum, producing retroversion; by degrees the anteversion or retroversion may become converted into an ante flexion or retroflexion, conditions in which the organ is bent upon itself. In some cases it is tipped to one side, conditions known as latero version or latero flexion. The symptoms arising from these several displacements are given in connection with their consideration elsewhere.

The causes of inflammation of the womb are the same as those which have been mentioned as causes of uterine catarrh. In cases of uterine catarrh, the whole organ finally becomes affected, as well as its mucous lining, by the long continuance of the causes referred to. Among the most active causes are sexual excess in married women, secret vice in the unmarried, the employment of various means to prevent conception, and improper dress. Very frequently, enlargement or congestion of the womb is the result of getting up too soon after confinement, in consequence of which the organ fails to return to its natural size, remaining more or less enlarged. Miscarriages and abortions are particularly liable to be followed by this condition, which is known as *subinvolution*, as are also tears of the neck of the womb and of the perinæum at childbirth. The wearing of badly fitting supporters should be mentioned as a not infrequent cause of chronic congestion of the womb.

Treatment: The treatment for chronic congestion

and enlargement of the uterus is essentially the same as that recommended for chronic uterine catarrh, the details of which need not be repeated here. The sitz bath, the hot douche, rest from violent exercise and from sexual excitement, and the avoidance of all the exciting causes of the affection, are the essentials of treatment. The method of treating this affection which was popular a dozen years ago, is now pronounced by the most eminent medical authorities to be in the highest degree irrational and detrimental to the patient. The cauterizations to which thousands of women have been subjected year after year, the only effect of which was to produce an aggravation of other ailments, are now condemned in no stinted terms by the very men who once employed these remedies.

In our experience at the Battle Creek Sanitarium Hospital, we have met with hundreds of these cases, in which caustics have been employed at intervals for periods ranging from six months to twenty years; and we have to say that we have never met a case in which there was evidence of substantial benefit from the course of treatment employed. The effect of long-continued cauterization is to increase the very difficulty which it is supposed to be efficient in curing. What the congested organ needs is not the application of irritating caustics, but the use of soothing remedies. The warm sitz bath attracts the blood to the surface, and thus relieves the local congestion. The hot douche acts efficiently as a remedy, by causing contraction of the dilated blood-vessels.

Cold injections were formerly recommended for this purpose, but the benefit received by their employment was very slight, if any good at all was accomplished. Cold applications to the uterus cause immediate contraction of its blood-vessels, but the contraction produced is almost immediately followed by dilatation, so that the congestion may be aggravated rather than relieved. Hot applications cause first a slight increase of congestion, but this condition is subsequently followed by a contraction of the blood-vessels, which continues for a long time. This is well shown by a simple experiment. The hands dipped in cold water, or rubbed with ice, are at first blanched, but in a few seconds become red from congestion of the blood-vessels of the skin; while upon the other hand, if the hands are dipped in hot water, they become at first reddened, but after they have been immersed for a long time the skin becomes white through contraction of its small arteries. This is well shown in the white and wrinkled skin of the hands of the washerwoman, which have been immersed in warm water for several hours. In performing surgical operations upon the womb, when annoyed by troublesome bleeding, we have resorted to the use of sponges dipped in hot water and applied directly to the organ, and have thus been able to witness an ocular demonstration of the utility of hot applications to this organ in the speedy checking of the bleeding, and the marked paleness of the organ after the application.

It should be remarked, however, that there are occasional cases in which the hot douche is not well tolerated, and benefit seems to be derived from the cool douche.

When there is considerable catarrhal discharge, some benefit may be derived from the employment of astringents. In addition to the hot water douche, alum, common salt, solutions of tannin, of golden seal, and various other astringent substances, are usefully employed for this purpose. It is a very good plan to add a teaspoonful of powdered alum or common salt to the last pint of water employed in the douche.

The best method for applying astringents, however, is by the use of tampons properly medicated. A number of suitable preparations are described in the appendix, which see.

When the uterus is enlarged, and indeed, in all cases of chronic inflammation, chronic catarrh, and congestion, in which there is little tenderness on pressure, uterine massage constitutes a most important measure of treatment. The mode of application is described in the appendix.

CONGESTION OF THE WOMB.

The symptoms of congestion of the womb are essentially the same as those of the two preceding diseases, which, as remarked, are really the result of congestion. The patient feels uncomfortable whenever on her feet long at a time, has a dull, aching pain across the lower part of the back, and often across the bowels low down in front, has a good deal of headache, particularly at the top of the head, and feels nervous and miserable, especially just before and just after the menstrual period, when the congestion is generally greater than at other times. At first there may be no leucorrhœa; but as the congestion

continues, uterine and vaginal catarrh are induced, the womb becomes enlarged and subject to the changes which are found in chronic inflammation of the womb and chronic uterine catarrh. It is impossible to draw an exact line between these various conditions, as one can hardly exist for any length of time without the other.

Treatment: Sitz baths, hot vaginal douches, astringent injections and tampons, avoidance of all the causes of the disease, and practically the same course prescribed for catarrh and inflammation of the womb, are the measures to be followed in this disorder.

EROSION. OR SO-CALLED ULCERATION OF THE NECK OF THE WOMB.

The symptoms of this disorder are profuse leucorrhœal discharge, aching around the body, low down, especially when on the feet, and the usual symptoms of catarrh or congestion of the womb, which see. As seen through the speculum, the os, or lower portion of the neck of the womb, is red, raw, and generally enlarged. The rawness is usually termed ulceration; but the term is an improper one, since the condition is not that of true ulceration, but simply of rawness. Ulceration of this portion of the body is a quite rare disease.

The causes of erosion of the os are the same as those of congestion, of which it is the result, the mucous membrane being softened and corroded by an acrid discharge from the womb, or a profuse vaginal secretion. When such conditions exist, the movements of the body in walking, etc., by producing friction of

the neck of the womb against the vaginal walls, rub off the softened membrane and leave the tissues in a raw and irritable condition.

A large share of the cases which are mistaken for ulceration of the womb are cases of laceration of the cervix produced at childbirth. We have cured scores of such cases by a proper surgical operation after they had been treated unsuccessfully for many years by means of caustics and the other usual applications.

Treatment: When the abrasion or erosion is due to a rupture at childbirth, and is at all severe, an operation by a skillful surgeon affords the most speedy and certain means of cure. When due to simple congestion, catarrh of the womb, or prolapsus, these conditions must be cured. The treatment which will afford relief and effect a cure in the great majority of cases is the following: A sitz bath three or four times a week. Two hot vaginal douches daily. (See appendix.) The use of astringent injections or tampons, preferably the latter, at least three times a week. All the causes must be avoided. Sexual continence should be observed. Proper diet, dress, regulation of the bowels, and attention to all the laws of health are essential in securing a rapid and permanent recovery.

AMENORRHOEA, OR SUPPRESSED MENSTRUATION.

This is a condition in which there is absence of the usual menstrual flow. There are two classes of cases: those in which the flow fails to make its appearance at the proper time, and those in which the flow is suppressed after having once been established.

Amenorrhœa is not a disease of itself, being simply a symptom of some disorder of the uterine organs. The conditions from which it may arise are various. In pregnancy, menstruation is usually suspended, although in exceptional cases the regular monthly flow continues. There is some discussion, however, whether in these cases the loss of blood is the true monthly menstrual flow. Menstruation is also usually suspended during nursing, although the function is not infrequently resumed two or three months after childbirth. Imperfect development of the reproductive organs, and obstruction of the uterus or the vagina, are conditions which occasionally give rise to amenorrhœa. When a mechanical obstruction exists, there is generally enlargement of the abdomen from accumulation of the menstrual fluid. Sudden suppression of menstruation is generally due to taking cold during the menstrual period, or a sudden mental shock. When it occurs suddenly in this way, the patient generally complains of pain in the back, headache, fever, and other unpleasant symptoms.

We have noticed also, in some cases, temporary suspension of the menstrual flow in consequence of a change in diet, in which persons who had been accustomed to a stimulating diet, consisting largely of animal fat, including a free use of stimulating condiments, suddenly discontinued the use of these articles. In these cases, however, we have never observed any impairment of the general health; in fact, in the majority of cases there has been improvement in the general health notwithstanding the suppression of this function. In the course of a few months the

function appears again, though as a general rule the flow is somewhat less profuse than before.

We have observed a few peculiar cases of suppression of menstruation in which the patient suffered at the times when menstruation should appear, with peculiar nervous symptoms closely resembling a slight epileptic attack.

In many cases there are symptoms of the occurrence of menstruation at the usual time for it to make its appearance, with an increase in the quantity of the vaginal secretions, known as the *molimen*, but no true menstruation.

Patients suffering with amenorrhoea are frequently subject at the time when the menstrual flow should make its appearance to hemorrhage in various parts of the body, as from the nose, lungs, stomach, bowels, etc. Some cases have been observed in which bloody sweat appeared at these times. These hemorrhages are sometimes termed vicarious menstruation.

Treatment: In cases in which the function has never appeared, the difficulty is generally due to morbid development, or some form of obstruction. For the first condition, such measures should be adopted as will improve the patient's general health, and secure proper development. In these cases, the hips are generally narrow and the breasts small, and the patient has something of a masculine appearance. When the difficulty has existed for a long time, its removal may be impossible; hence the importance of giving attention to the matter in time. The best means of treatment in these cases are warm

hip baths three or four times a week, warm vaginal douches daily at a temperature of about 100° F., general massage, and special massage of the breasts and womb. The massage should be administered daily in the manner directed in the appendix, which see. Friction and manipulations of the thighs and lower extremities are especially serviceable, as is also percussion of the lower portion of the back.

When complete obstruction exists, as indicated by the periodical occurrence of the usual symptoms of menstruation, but without the menstrual flow, and with enlargement of the lower part of the abdomen, surgical measures should be resorted to, to allow the accumulated fluid to escape. This should be done gradually, however, and in such a way as to prevent the entrance of air, as otherwise decomposition would occur, which might result in poisoning of the blood. This class of persons often suffer much mental annoyance through suspicion of pregnancy. Such cases of course require the services of a skillful physician.

In cases in which suppression occurs suddenly during the menstrual period, the patient should take a hot foot or sitz bath, or better still, a hot blanket pack, and should be made to sweat profusely by this means combined with hot drinks. Hot fomentations should be applied across the lower part of the bowels, hot bricks, hot bags, and other similar applications to the limbs and inside of the thighs. Ice bags or compresses should be applied over the lower portion of the spine, and the patient should be kept quiet in bed. If the flow is not re-established, the suppression will become chronic. When the symptoms of menstruation

with increased vaginal discharge, or *molimen*, occurs at the time for menstruation, but without the natural discharge, the same measures should be adopted; and when the condition becomes chronic, or there is reason to expect that the menstrual flow will not make its appearance at the proper time, warm vaginal douches and hot sitz baths should be administered for a week before the time for the recurrence of the period, and thorough massage of the bowels and also of the uterus should be given daily.

[When amenorrhœa exists in consequence of debility or anæmia, as in consumption and other prostrating diseases, attention should be given to the improvement of the general health by nutritious food, daily exercise in the open air, daily massage, with inunctions, electricity, and other tonic measures.] In these cases, the amenorrhœa is not to be considered as the cause of the existing debility or general disease, as is usually thought to be the case. It is simply the result of general depression of the system which will disappear after the removal of the cause. In these cases, warm sitz baths, hot fomentations over the bowels, and daily application of the ice compress to the lower portion of the spine for an hour or two, are useful measures. The local application of electricity by a competent person is also of very great advantage. It should be recollected, however, that it will be of no advantage to restore the function while the cause remains, since its suspension is simply a means adopted by nature for economizing her resources; and to force her to perform a function for which she is unprepared, will be the means of injury,

rather than good. When the general health has been sufficiently improved, nature will herself correct the disordered function in most cases, and the simple measures above suggested are all that will be required in any but very exceptional cases.

Emmenagogues.—We wish to say a word just at this point about a class of drugs known to the physician as emmenagogues, because of their supposed power to restore the menstrual function. There is quite a long list of these remedies, none of which, however, are reliable. Those which are the most efficient as stimulants of the uterus are so poisonous and potent for evil that much more harm than good is likely to come from their use, and hence none of them are to be recommended. If used at all, they can do good only when discreetly used by an experienced physician.

SCANTY MENSTRUATION.

The length and quantity of the menstrual flow varies very greatly in different individuals within the limits of health. A person suffers with scanty menstruation when the function is meagre compared with what is usual for the same individual. The principal causes are debility, consumption, disease of the ovaries, ovarian tumors, ante flexion of the uterus, melancholy, and chlorosis. This disease is very common among English girls.

Treatment: The general treatment should be the same as recommended for similar cases in which menstruation is entirely suspended. For a few days before the period should make its appearance, the

patient should take daily a warm sitz bath for fifteen or twenty minutes. At the time of the period, warm enemas, cold compresses applied to the lower part of the spine, with fomentations over the bowels at the same time, constitute the best measures of treatment. The difficulty will generally exist until the patient shows marked evidences of improved health, or until the local disease upon which it depends is removed. Massage to the limbs and bowels, as well as to the womb itself, are among the indispensable means of treatment in bad cases.

When the interval between the menstrual periods is too prolonged, the causes are usually the same as those mentioned as causes of scanty menstruation, and the treatment should be essentially the same.

INFREQUENT MENSTRUATION.

The interval between the beginning of one menstrual period and that of another is normally about four weeks. The period may vary within considerable limits in different individuals without impairment of health; but should remain the same with the same individual through life, except, of course, during pregnancy and nursing, till the approach of the menopause, or change of life. Any great deviation is an indication of disease, which should receive prompt attention.

The causes of delayed menstruation are essentially the same as those of scanty or suppressed menstruation, and the same treatment is demanded, especial care being taken to remove or avoid the cause of the condition.

VICARIOUS MENSTRUATION.

In cases of amenorrhœa, it occasionally happens that a bloody discharge occurs at the menstrual period from some other part of the body than the uterus. This is known as vicarious menstruation. Such discharges have been observed to occur from the scalp, ear, nose, eyelids, cheeks, gums, salivary glands, lungs, stomach, breasts, abdomen, back, arm-pits, chest, navel, kidneys, bowels, legs, hands, and from wounds, sores, or ulcers. Hemorrhages from the stomach, breasts, and lungs are most frequent, and occur in the order named.

Treatment: The habit, when once established, is often difficult to cure, and frequently continues for many years in spite of treatment, sometimes resulting fatally. The measures to be employed are the same as recommended for amenorrhœa, with the usual means for checking the hemorrhage of the affected part.

MENORRHAGIA—PROFUSE MENSTRUATION.

There is no definite standard as to the length or quantity of the menstrual flow. When the flow is much more than usual, or so excessive as to produce weakness and prostration either at the time or after, it may be termed menorrhagia.

Menorrhagia may be produced by either plethora or debility. When resulting from plethora, the patient suffers with severe throbbing headache, pain in the back, and general symptoms of fever. When it

results from the opposite condition, the patient is very weak, pale, and thin in flesh, and the flow is almost continuous, one period beginning almost at the conclusion of the other. In addition to plethora and debility, menorrhagia may be the result of chronic congestion of the uterus, prolapsus and other displacements, tumors, laceration of the neck of the uterus, disease of the heart, liver, lungs, and other important organs.

Treatment: In cases of menorrhagia arising from plethora, the diet should be simple and plain. The patient should take but two meals a day, and little or no meat. Abundant out-of-door exercise is also essential; great advantage may be derived from the use of packs, vapor baths, hot-air baths, and other eliminative treatment, until the symptoms of plethora disappear. Daily cold sitz baths between the periods are also advantageous. At the time of the period, and about twenty-four hours before it is expected, the patient should have complete mental and physical rest in bed. Cold cloths should be applied over the lower part of the abdomen and between the thighs. A cold or cool enema should be given two or three times a day. Cold should not be applied for more than an hour or two at a time without allowing the patient an interval of half an hour. Bags of hot water or heated bricks or bottles should be applied to the lower part of the spine three to five hours a day, at the same time that cold applications are made over the womb.

In patients who are pale, debilitated, and have but little blood, energetic measures are often needed.

The patient should observe the directions just given respecting quiet. Cold applications should be made to the lower part of the bowels, being replaced once in twenty or thirty minutes by a hot fomentation for three or four minutes, cold being then applied again. The cold enema and often the cold vaginal douche are indicated when the flow is profuse. Heat should be applied to the spine as above directed.

The hot vaginal douche should be used in all cases in which the flow is excessive. When hot water alone is not sufficient, a strong solution of alum should be used. The douche should be given very thoroughly, and may be repeated every hour or two if necessary. A still more efficient measure is the alum tampon, for mode of using which see appendix.

In cases in which the hemorrhage is almost continuous from one period to another, the patient should remain in bed or lie upon the sofa several days after the flow has been checked by the treatment before described. This disease can only be permanently cured by improvement of the general health. The same directions for treatment should be followed in cases in which the menorrhagia arises from congestion, tumors, displacements, or any other of the causes mentioned. When the hemorrhage cannot be controlled in any other way, it sometimes becomes necessary to plug the vagina with cotton in the manner described for checking uterine hemorrhage.

We should not fail to mention another point in the treatment of these cases, which has been regarded by observing physicians of all nations since the time of Hippocrates, the father of medical literature, viz.,

the importance of elevating the lower extremities and hips of the patient above the level of the rest of the body. This may be done by raising the foot of the bed twelve or fifteen inches higher than the head, or by raising the foot of the mattress or the springs on which the mattress rests.

METRRORRHAGIA—UTERINE HEMORRHAGE.

This is a hemorrhage occurring from the uterus at other times than at the menstrual period. The causes are essentially the same as those described as occasioning menorrhagia.

Treatment: Keep the patient quiet in bed; apply cold over the bowels and between the thighs; administer cold enemas and hot vaginal injections. In case the hemorrhage is severe, much may be gained by tying a band tightly around one or both lower limbs, thus retaining in the legs a large amount of the venous blood. The ligature should not be retained long enough to do harm, and should be gradually removed if the limbs become considerably swollen and purple. Compression may also be practiced by means of a pad composed of a folded towel placed over the womb.

In addition, the measures recommended for menorrhagia should be employed with conscientious care to follow the directions given. The alum douche or tampon will be found to succeed in nearly every case. We have rarely found it to fail.

In case the patient becomes faint from loss of blood, fomentations should be applied to the head.

This is one of the best means of stimulating the flagging action of the heart, and may be applied in all cases of uterine hemorrhage from whatever cause, as well as in cases of severe hemorrhage from other parts in which there is danger of syncope.

In severe cases it often becomes necessary to plug the vagina. This is best done by means of moist cotton. The cotton should be saturated with water and squeezed as dry as possible. It should then be soaked for a few seconds in a strong solution of alum, and again squeezed dry. It should then be made into a number of small rolls of a size convenient for introduction; and after tying a string ten or twelve inches in length around the center of each, they should be passed into the vagina and crowded up around the neck of the uterus as tightly as possible. The whole neck of the womb should be surrounded, and the vagina should be packed as full as possible. Care should be taken that no spaces are left between the different portions of cotton, and that the whole mass is made as compact as possible. This is generally known as tamponing the vagina. The operation cannot be thoroughly done without the aid of a speculum, and hence a physician should be called in every case of uterine hemorrhage sufficiently severe to require this mode of treatment. Persistent hemorrhage also demands a thorough examination by a competent physician to ascertain the real cause of the difficulty in order to adopt the proper measures for permanent relief.

TOO FREQUENT MENSTRUATION.

The causes and treatment of this condition are essentially the same as have been stated in the section on "Profuse Menstruation."

FETID MENSTRUATION.

Peculiar odors are often attached to the menstrual discharge without being of any special significance. A violet odor has been described as often present in certain forms of nervous disease. When the discharge has an exceedingly fetid odor, however, indicative of putrescence, it is important that the matter should receive serious attention, as there is probably some serious uterine malady which requires treatment. A physician should be consulted if relief is not speedily found from the employment of the measures of treatment recommended for inflammation of the womb.

DYSMENORRHOEA—PAINFUL MENSTRUATION.

There are numerous varieties of this affection, the following being the most common forms: Neuralgic, congestive, obstructive, membranous, and ovarian. Neuralgic dysmenorrhœa is caused by general neuralgia, chlorosis, gouty and rheumatic conditions of the system, high living, especially the use of stimulating condiments and excessive quantities of meat, sexual excess, and secret vice. Congestive dysmenorrhœa is caused by plethora, sudden chill, taking cold at the beginning of menstruation, chronic conges-

tion of the uterus, retroflexion, cellulitis, torpidity of the liver, and constipation of the bowels. Obstructive dysmenorrhœa arises from obstruction of the canal of the uterus by ante flexion or other causes, as a fibrous tumor, a polypus, or swelling of the mucous membrane from uterine catarrh. The variety known as membranous dysmenorrhœa, in which a cast or mold of the cavity of the uterus is sometimes expelled, is due to chronic congestion of the uterus, which is increased at the menstrual periods almost to a condition of inflammation resulting in the formation of a false membrane in the womb. Ovarian dysmenorrhœa results from congestion and inflammation of the ovaries.

In neuralgic dysmenorrhœa, the patient has throbbing pain in the loins and lower part of the bowels, together with neuralgic pains in other parts of the body. In congestive dysmenorrhœa, when produced by taking cold, as by getting the feet wet just before the time of the menstrual period, the patient suffers with severe pain, often accompanied by a chill, which is followed by fever. When inflammation is present, the pain is dull and heavy. Severe bearing-down pains for a few hours or a day or two before the beginning of the flow, with relief either entirely or to a great extent as soon as the flow is established, indicates obstruction. In membranous dysmenorrhœa, the patient suffers with severe bearing-down pains, which cease as soon as the membrane is expelled. Ovarian dysmenorrhœa is characterized by pain continuing for several days before the period, in one or both groins, and extending down the thighs;

there is also, usually, tenderness in one or both breasts. When one ovary only is affected, the sympathetic pain is manifested in the breast of the same side. The tenderness in the groin is more or less marked between the menstrual periods.

We have met with a few cases of another rare form of dysmenorrhœa, which has been denominated, "intermenstrual dysmenorrhœa" on account of its occurring midway between the menstrual periods, the pain being similar to that in ovarian dysmenorrhœa.

Treatment: Dysmenorrhœa can generally be cured by the adoption of proper means, provided the real cause is ascertained; though when due to fibrous tumors of the uterus, the treatment often fails. The most that can be done, however, in the domestic treatment of the difficulty, is to palliate the symptoms at the time of the menstrual period. Curative treatment can be best managed by a competent physician. The patient suffering with any form of dysmenorrhœa should take care to keep the bowels quite free by a carefully regulated diet, and the use of the warm water enema when necessary. Laxatives and purgatives should be carefully avoided.

The patient should rest quietly in bed or upon the sofa for a day or two before the time for menstruation to begin. On the day it is expected, or as soon as the pain commences, the patient should take a hot full bath or a hot blanket pack, and should afterward be covered with warm woollen blankets, with hot water bags or heated bricks to the feet and back and over the lower part of the abdomen, and should be kept as quiet as possible. Severe pain, when not

relieved by these measures, will often yield to hot fomentations over the lower part of the bowels, when thoroughly applied; or the application of the hot blanket pack. Especial pains should be taken to keep the feet and limbs thoroughly warm. The use of both faradic and galvanic electricity is in some of these cases very advantageous. We have often secured almost immediate relief from pain by their use. A large, hot enema will sometimes give relief. The water should be injected slowly, and should be retained for several minutes if possible to do so. In many cases, hot sitz baths give speedy relief. The hot bath was known to the ancients and employed by them in these cases. It was highly recommended by Rhazes, an eminent ancient physician. Fomentations across the lower part of the back are also very advantageous.

We have found good results from the use of hot water bags applied to the spine for three to five hours daily, and bags filled with ice or cold water applied over the lower portions of the bowels at the same time, the treatment being employed for some days before the menstrual period. The hot vaginal douche should be used daily, and may be employed at the time of the period in the variety due to congestion.

When the disease is due to ante flexion, which is according to our observation the most common cause of severe pain at the menstrual period, a slight surgical operation is usually required, not simply to enlarge the canal, but to remove small growths known as vegetations, which are present in nearly all cases. The skillful application of electricity is necessary in these cases after the operation, to render the results

permanent, and occasionally a cure may be effected by the use of electricity alone.

Opium is very frequently resorted to in these cases, but it should be avoided as much as possible, as the opium-habit is very likely to be contracted. We have met a number of cases in which the habit was acquired in this way. If anodyne remedies of any sort must be used, gelsemium, hyoscyamus, and conium are much to be preferred. These remedies should not of course be used unless prescribed by a physician. We seldom find it necessary to resort to their use, almost invariably securing relief by the measures described.

CONGESTION OF THE OVARIES—OVARIAN IRRITATION.

The symptoms of this disease are tenderness in the groin, pain in standing or walking, more or less continuous pain, aggravated at the menstrual period, which is generally ushered in by a chill, followed by a fever resembling that of ovarian inflammation.

This condition is frequently called chronic inflammation of the ovaries, and is often accompanied by enlargement of the organ which, in consequence of some sudden jar or unusual strain, becomes dislocated or prolapsed. Ovarian irritation often produces a reflex effect upon the system. It is a frequent cause of obstinate dyspepsia, especially of the nervous form, accompanied by spinal irritation, and painful headaches, and in some cases of serious mental disease, finally amounting to insanity. Hysteria and a pecul-

iar form of epilepsy are frequent results of this form of ovarian disease.

Among the chief causes may be mentioned improper dress, taking cold at the menstrual period, disappointment, induced abortion, the use of "preventives," constipation, the opium-habit, nervous debility, inflammation of the uterus, displacement of the uterus, and self-abuse.

Treatment: The patient should be given the advantage of as good hygienic surroundings as possible. Sun baths, massage, complete rest at the menstrual period, daily fomentations over the affected parts, the daily use of the hot vaginal douche, the hot enema, fomentations over the lower part of the spine, and the local application of electricity, are among the best means of treatment. We have secured relief in some cases of this kind by the use of bags filled with hot water and applied to the spine four to six hours a day, with an ice bag applied over the affected organ at the same time.

We have recently found a valuable addition to our means for relieving this class of cases in the extract of the *eucalyptus globulus*, or Australian blue gum-tree, the use of which, with the cotton tampon, is described in the appendix.

Some eminent surgeons have recently resorted to the plan of removing one or both of the ovaries in cases similar to this. The effect thus far has been very satisfactory, although the remedy is by no means free from danger. We have treated quite a large number of cases of ovarian irritability, and have

thus far succeeded in effecting a cure in nearly every case without resorting to a surgical procedure.

INFLAMMATION OF THE OVARIES.

The leading symptoms are sudden pain in one or both groins, sometimes extending down the legs to the feet; often pain in the breast of the affected side; increase of pain during menstruation; tenderness on pressure; pain in moving the bowels; general distress; nausea; more or less fever.

This disease most frequently results from taking cold during menstruation, from injury, and from the infection of gonorrhœa. In many instances innocent wives have suffered from inflammations which have rendered them barren and invalids for life by the last-named disease contracted from incontinent husbands.

Treatment: Rest, fomentations to the affected part, hot vaginal douches two or three times a day, and especially the hot enema taken once or twice a day and retained for half an hour or as long as possible. The patient should remain perfectly quiet in bed, and should not attempt to get upon her feet or walk about for some time, or until the local irritation is wholly subdued. Ice bags over the seat of pain and hot water bags to the spine opposite, is a useful measure. The bowels must be kept loose by enemata.

CELLULITIS—PELVIC PERITONITIS—INFLAMMATION ABOUT THE WOMB.

This is one of the most serious inflammatory affections to which women are especially subject. There are several forms of the disease, but they are so

nearly alike as to causes, treatment, and results, that they may be considered together. This is especially true for a work of this kind, as the different conditions are often so difficult to distinguish that even the most skillful physician may be unable to arrive at a correct diagnosis.

The disease is usually ushered in by a chill, which is accompanied and followed by the following symptoms:—

Fever; pelvic pain; small, wiry pulse; nausea and vomiting; tenderness on pressure just above the pubic bone; painful urination and defecation; profuse menstruation.

Inflammations of this sort are much more common than is generally supposed, and are usually very serious in their results. There is a strong tendency to the formation of abscesses. Another serious complication is the inflammation of the broad ligament, which subsequently contracts, thus becoming shortened. This kind of shortening is a common cause of lateral displacements of the uterus.

Inflammation following childbirth, abortion, taking cold during the menstrual period, inflammation of the ovary, gonorrhœa, the use of caustics upon or in the uterus, wearing of ill-fitting pessaries, and sexual excesses, are the most common causes. An eminent New York physician has recently called attention to the fact that latent gonorrhœa, or cases of the disease supposed to be cured in men, will communicate this form of disease. In these cases, the disease begins with less violence.

Treatment: An acute attack can generally be

checked by a sufficiently thorough and energetic course of treatment. The patient should be kept perfectly still in bed. If the fever is high, the ice cap should be applied, with ice compresses or bags filled with ice-cold water over the affected part. The most effective measures of treatment, however, are the hot vaginal douche and the hot enema. These should be given with great thoroughness. The douche should be taken for an hour at a time, and should be repeated three or four times a day, or it may be given continuously for several hours. This is one of the most reliable means known for cutting short an inflammation after it has begun. The hot enema should be retained for fifteen to thirty minutes if possible. Hot applications should be made to the feet to balance the circulation. The hot blanket pack is an excellent measure.

Chronic cases require the persistent use of fomentations over the lower part of the abdomen, hot douches two or three times a day, together with rest in bed and sexual continence.

It is certain that the employment of the hot vaginal douche, once, twice, or even three times daily, will accomplish more than any other one means in these cases. Good results also follow the careful employment of pelvic massage after the tenderness becomes sufficiently subsided to allow the necessary manipulation. Great care to avoid a relapse is necessary, as it is very likely to occur at the menstrual period. Getting up too soon after an attack, exposure to cold and overexertion at the menstrual period, are likely to bring on a relapse.

In the majority of these cases the seat of the inflammation is the Fallopian tube of one or both sides. In some cases pus forms, and the difficulty increases in spite of all treatment, making a surgical operation for removal of the tubes necessary.

A skilled surgeon should always be consulted in these cases, and too much time must not be lost in delay, as the patient's chances may be thereby greatly lessened. By means of the resources of modern aseptic surgery, these cases may now be treated surgically with comparatively small risk to life.

It should be mentioned that inflammation of the appendix vermiformis sometimes closely simulates a pelvic inflammation such as has been described above. This also requires a surgical operation in many cases, but the operation should be deferred, if possible, until the acuteness of the attack is passed.

The general measures of treatment are much the same as above recommended. The enema should be freely used, and the diet should consist of kumyss, buttermilk, or gruels.

PROLAPSUS, OR FALLING OF THE WOMB.

This is one of the most common of all the displacements to which the organ is subject. The following are among the leading local symptoms: Dragging pain in the lower part of the back, extending around the body; general tenderness over the pubes; sensation of fullness in the vagina; irritation of the bladder and rectum; discomfort increased by walking or exertion; leucorrhœa; painful or profuse menstrua-

tion; in very bad cases, protrusion of the organ; symptoms sometimes absent.

In addition to the above symptoms, there is generally more or less impairment of the general health, constipation of the bowels, deranged digestion, headache, especially at the top of the head, and general debility. The condition of the organ may be seen by reference to Plate XIII.

Falling of the womb is a very common affection, especially among women who have borne children. It also occurs in women who have never been pregnant, as the result of tight lacing, wearing heavy skirts suspended from the hips, and fashionable dissipation. Prolapsus is sometimes induced by a sudden jar or fall; but it is most commonly preceded by chronic congestion of the organ, by which its weight is very greatly increased, and becoming too heavy to be held in place by its natural supports, it settles down in consequence. Prolapsus is also the result of violent muscular exertion, rupture of the perinæum in labor, and of getting up too soon after childbirth. Every cause which tends to produce disease of the sexual organs in females may occasion prolapsus. The immediate cause in chronic cases, and that which presents the greatest obstacle to successful treatment, is relaxation of the natural supports of the organ.

Treatment: The usual treatment for prolapsus consists almost exclusively in the application of supporters of various kinds. The amount of ingenuity which has been displayed in the construction of devices of various sorts for the purpose of restoring a prolapsed uterus to its natural condition, is not sur-

passed by the display of inventive genius in any other direction. While pessaries or supporters of some kind are often very useful in the treatment of prolapsus as temporary palliatives, and as a means of relieving cases which are incurable, they should ever be regarded as incapable of producing a radical cure. In many cases they actually increase the morbid conditions upon which the prolapsus depends, although giving temporary relief to the most unpleasant symptoms attending this form of displacement. There are many eminent physicians who condemn their use entirely. We regard this as somewhat ultra ground, but in our practice use the pessary or uterine supporter, just as we use a splint to support a broken limb while the ends are knitting together, or as we would employ a crutch to give rest to a diseased knee joint. The pessary is often useful as an auxiliary of other treatment, but of itself seldom does anything more than to palliate the patient's sufferings, and this effect is only temporary unless other means is put in operation by which a cure may be effected.

The rational plan of treatment for prolapsus requires, first, the removal of the causes by which the difficulty has been produced, when they are still in operation; second, relief of the congestion and enlargement of the organ by proper treatment; third, palliation of the painful symptoms attending this condition; fourth, restoration of the natural supports of the organ to a healthy condition.

The first indication must be met by thorough and careful attention to the laws of sexual hygiene. The second indication is best met by a persistent use of

sitz baths and vaginal douches, which should be taken as recommended for the treatment of catarrh and congestion of the womb, together with the use of the cotton supporter and astringent applications, as directed in the appendix. In many cases, the douche can be taken twice a day with advantage, in the morning and again just before retiring at night. Greater benefit is derived from this treatment when the patient can remain in a recumbent position for some hours afterward. In some cases the patient requires rest from walking and other exercises upon the feet for a few weeks. In the majority of cases, however, it is better for the patient to continue as much exercise as can be endured without excessive fatigue, as it is important that the muscular strength should be kept up.

The third indication is in part met by the treatment already described. The hot douche and sitz baths will generally accomplish more than any other two remedies in relieving the local pain and discomfort. In many cases, much additional benefit may be derived from wearing a properly adapted pessary, or supporter. When the womb is prolapsed, its circulation is interfered with so that the organ becomes engorged with blood. This can be overcome by a restoration of the organ to its proper position so as to give freedom to the circulation. The simplest form of supporter is a small roll of cotton. It should be pressed up against the mouth of the womb after it has been restored to its proper position. It should be introduced while the patient is lying upon the back or is in the knee-chest position. See Plate XII.

The ball of cotton should be large enough to be retained in position, and should be saturated with glycerine or a weak solution of tannin in glycerine before being applied. A string should be tied around the center of the roll to facilitate its removal. This application the patient can make for herself, though not nearly so well as it can be made by a physician. Care should be taken in removing the cotton that the organ is not dragged down with it, to avoid which, it should be first loosened by the finger to facilitate its removal. Cases which need the application of a pessary require the care and attention of an intelligent physician.

The fourth indication is the most important of all, as it relates more directly to the radical cure of this affection. Unfortunately, this part of the treatment of prolapsus is rarely attended to. Either the physician fails to appreciate the importance of this part of the work, or the patient is satisfied with a mere amelioration of her symptoms, and fails to persevere in carrying out the proper methods of treatment until a complete cure is effected. In meeting this indication, one of the best of all measures of treatment is the daily employment of special exercises. General exercise is essential for the purpose of strengthening the general muscles of the body; but there are certain special exercises which may be taken, the advantage of which can hardly be overestimated. These are fully described in the appendix under the head of postural treatment.

Movements of this sort not only strengthen the abdominal muscles by calling them into active exer-

cise, which of itself has a tendency to lift the prolapsed organs into position, but the force of gravitation acts directly to restore the displaced organ to its normal position. The patient will also derive great advantage from sleeping with the hips elevated as much as is consistent with comfort. In addition to these measures, the patient may take with advantage certain exercises for developing the muscles of the trunk and abdomen, such as bending forward and backward, bending sideways, kneading and percussing the abdominal walls, lifting weights with hands stretched above the head while lying down, etc.

These movements may generally be taken at least twice every day with advantage. If taken but once, the best time is at night just before retiring. This is also the best time for taking an astringent douche. A very excellent plan is to take the movements first, then the hot douche, concluding by the injection of a pint of water containing one quarter of an ounce of alum or tannin, or two tablespoonfuls of a strong decoction of oak bark. By means of the movements, the uterus is restored to its natural position; and by the aid of the hot and astringent injections, the lower supports of the uterus are toned up so as to aid in holding the organ in position.

Electricity is a very valuable remedy for use in these cases. It may be applied both externally and internally. When applied internally, it should be administered by a competent physician. External applications may be made by the patient. The faradic current is of service, but the sinusoidal is most efficient.

Congestion is also relieved by the same treatment;

and thus nature is given the opportunity during the night to do much toward restoring the organ to its normal condition. When the patient suffers much with constipation, which is nearly always present in these cases, and very obstinate, the bowels should, if possible, be relieved at night just before retiring. In case there is loss of desire to move the bowels, which sometimes exists, benefit will be derived from the injection into the rectum of four tablespoonfuls of cold water, containing five to fifteen drops of spirits of camphor. The solution should be retained ten minutes, by the end of which time there is generally a very strong desire to move the bowels. In some cases a tablespoonful of glycerine is more efficient than the camphor, to be used in the same way.

In cases in which the prolapsus is due to rupture of the perinæum in childbirth, a surgical operation may be required to effect a cure. We have met scores of cases of this kind, and by performing the necessary operation to restore the parts to a natural condition, have obtained the most gratifying results. In cases in which the organ is prolapsed to such an extent as to appear outside of the body, which is a very rare condition, however, a complete cure can rarely be effected, although the organ may be supported by means of properly adapted pessaries. As a rule, however, the cotton supporters, saturated with some astringent, are much superior to any other form of support.

ANTEVERSION.

In anteversion, or forward displacement, the womb is tilted forward against the bladder at the same time that it retains its usual form. The organ is naturally tilted forward to a considerable degree, so that anteversion is simply an exaggeration of its natural state. (See Plate XIV.)

The particular symptoms which arise from this form of displacement are painful and frequent urination; aching pain just above the pubic bones; in some cases pain in moving the bowels, and inability to walk or to be upon the feet on account of the aggravation of the local pain.

The principal causes of anteversion are enlargement of the womb, violent efforts, as in lifting, jumping, straining, and especially tight lacing; the last-named cause is undoubtedly one of the most common of all. Anteversion may also be the result of weakening of the supports which sustain the uterus in position, which may arise from general weakness of the whole system or from laceration of the perinæum.

Treatment: The first matter to be attended to is removal of the cause. This will require attention to the suggestions made for the same purpose with reference to chronic congestion of the uterus. Sitz baths and hot douches should be thoroughly employed. The patient should remain as much as possible in a horizontal position upon the back. A surgical operation is sometimes necessary, in order to effect a radical cure. Much harm has often resulted from depending upon the use of pessaries in these

cases. The supporter is of service; but we can accomplish much more in the treatment of displacements without pessaries of any sort, than with them alone. The special exercises and postural treatment described in the appendix are of special service in these cases, and are alone capable of effecting a cure in many cases. The cotton supporter with astringents may also be usefully employed in these cases.

ANTEFLEXION.

This is commonly the result of an exaggeration of an anteversion. The weight of the displaced organ causes it to bend upon itself, sometimes so closely that the canal is almost entirely closed. (See Plate XIV.) In many cases, the symptoms are the same as those of anteversion, only exaggerated; but when the flexion is so sharp as to create a mechanical obstruction to the menstrual flow, great pain at the menstrual period is added to the other symptoms.

Treatment: The treatment of anteflexion is essentially the same as that for anteversion, only it must be still more thorough and persevering, as this form of displacement is one of the most difficult to cure. When there is great pain at menstruation, a surgical operation will probably be necessary, and if properly performed, will be pretty certain to give relief.

Electricity in the hands of a skillful physician is also capable of accomplishing much in these cases. In the majority of cases, indeed, the persevering use of galvanic electricity will effect a cure. Pain is due, not to the obstruction caused by the flexion directly, but, in most cases at least, to small growths, or vegetations, which form upon the lining membrane of the uterus.

It should be remarked that ante flexion is not curable in the majority of cases. It is a congenital condition, resulting from the lack of complete development of the uterus at puberty.

RETROVERSION AND RETROFLEXION.

In this form of displacement the uterus is tipped backward against the rectum. The organ may be tipped directly back, or inclined more or less to either side. (See Plate XV.)

The principal symptoms are constant pain in the lower part of the back; great discomfort in walking, increased pain on moving the bowels, with a sense of obstruction; sometimes spasmodic contraction of the rectum or bladder; painful menstruation; in some cases, chronic inflammation of the bladder.

Treatment: The same remark made with reference to cause and treatment in connection with the subject of anteversion, applies also to retroversion. Frequent sitz baths and daily hot douches are among the essentials of treatment. To these should be added daily replacing the organ by a competent person. When the body is not bound by adhesions, replacement may generally be effected by the patient herself by the following procedure: The patient should place herself upon the bed in a kneeling position. She should now bend forward until the chest is in contact with the bed. The limbs should now be moved downward until the thighs are perpendicular, so that the pelvis is elevated in the air as high as possible. The inlet of the vagina should now be opened so as to admit air. This may be done by raising the

perinæum with the finger. As soon as the air enters, the womb falls forward into position. When necessary, air may be admitted by means of a glass tube inserted before the exercise is begun, or by means of the Davidson syringe. This is known as the knee-chest position, and is more fully described in the appendix, and illustrated on Plate XII. While in this position, a cotton supporter, prepared according to the directions given in the appendix and saturated with tannin and glycerine or some other astringent preparation, should be inserted and pushed into position behind the neck of the womb so as to support the fundus. It is a better plan to insert the cotton support behind the cervix before the knee-chest position is assumed, pressing it up farther after the organ goes forward into position.

This is one of the most important of all the means of treating this disease, when taken in conjunction with other postural treatment, etc. The patient should avoid lying on the back, and should be very quiet at the menstrual periods, remaining in bed most of the time. Care should also be exercised by the patient to avoid straining at stool.

Until the discovery of the method of curing this disease by shortening the round ligaments, for which the world is indebted to Dr. Alexander, of Liverpool, England, this condition, when chronic, was practically incurable. Pessaries as a remedy often proved to be even worse than the disease. Various improvements have been made upon the method first suggested by Dr. Alexander, whereby this operation is rendered simple, safe, and almost certain to cure this condition.

LATERAL DISPLACEMENTS.

The womb may be displaced either to the right or left, as well as backward or forward. Lateral displacements are generally the result of inflammation on the side to which the organ is drawn, producing contraction of the lateral ligament. Displacements of this kind seldom cause any very great amount of suffering, which is to be regarded as fortunate, as their complete relief is not always possible. There is often much suffering in these cases, however, which is attributable to the old inflammation. For relief of this, such measures should be used as have already been recommended for the treatment of inflammation about the uterus, page 530. The hot douche, hot fomentations, and hot enema are invaluable in such cases.

PROLAPSUS OF THE OVARIES.

This is a very serious condition, fortunately not so common as prolapsus of the uterus. The leading symptoms are pain in walking, of a sickening character, starting in the groin and often extending down the front portion of the leg of the affected side; throbbing pain when the bowels are loaded; great pain during movement of the bowels; pain during sexual connection; sudden, severe pains radiating from the groin of the affected side; great mental depression. The ovary is usually enlarged and exquisitely sensitive, and can be felt by the finger. It may occupy any one of a number of positions besides the normal one, but most often lies behind the uterus.

The most common causes of prolapsus of the ovaries are subinvolution of the uterus, chronic congestion of the womb, prolapsus, retroversion or retroflexion, and other displacements of the uterus, inflammation of the ovaries, sexual excesses and abuses, abortion, prevention of conception. One of the worst cases of this disease which we ever met was in a young woman who had been addicted to the habit of self-abuse.

Treatment: The treatment of this disease is essentially the same as that recommended for retroversion.

The knee-chest position should be taken several times a day. Hot douches must be used twice a day, two to five gallons of water at a time. When accompanied by retroflexion or version, cotton supports medicated by astringent preparations should be employed.

Relief will be obtained in these cases by wearing an abdominal bandage, by which the pelvic organs are relieved of the weight of the intestines.

In very bad cases which cannot be relieved otherwise, the ovaries may be removed.

THE RADICAL CURE OF DISPLACEMENTS OF THE WOMB AND OVARIES.

At the time the first edition of this work was published, the great majority of extreme cases of retroversion, anteversion, and prolapsus, were practically incurable. In many cases, it was possible to hold the organ in position by the employment of pessaries of various sorts, but the use of these artificial supports is attended by no little inconvenience. In many cases, it is necessary to change the instru-

ment employed for one of larger size every few weeks or months, until finally the displaced organ can be kept in place by no other means than a pessary with an external support; so that in the majority of cases the result of wearing supporters of any description is ultimately to render the patient's condition worse than before. In many instances, the continued pressure of a hard instrument impinging against the ovaries, causes chronic inflammation of these organs, and in not a small proportion of cases downward and backward displacements are accompanied by prolapsus of the ovaries, which, becoming tender from congestion or inflammation, will not tolerate the presence of a pessary, so that the patient is unable to obtain even the temporary relief afforded by this instrument.

We are glad, however, to be able to state at the present date, 1896, that the advances made in the surgery of this region of the body, within the last few years, now render it possible to cure a very large proportion of these cases by a perfectly safe and comparatively simple operation, the nature of which will be better understood by a brief explanation of the method by which the uterus is normally held in position.

The womb is a wedge-shaped body, balanced in the pelvis between the bladder in front and the rectum behind. As one or the other of these hollow, adjacent organs is filled or emptied, the uterus is slightly tilted backward or forward, as its upper portion has considerable latitude of movement in the abdominal cavity. To the lower part of the body of

the womb are attached four ligaments, two in front and two behind, connected respectively with the bladder and the rectum. Two broad membranous bands, the broad ligaments, connect its sides to the sides of the pelvis; while from either side at the upper part arises a "round ligament," which passes forward and through the abdominal wall and the abdominal ring, then passes along the canal between the layers of muscle which chiefly compose the abdominal wall, known as the inguinal canal, and emerges at the external abdominal ring, which lies just at the outer end of the pubic bone. The uterus is sustained in position by the adjacent organs which buoy it up, and by the ligaments attached to its lower part. These ligaments contain more or less muscular structure, which gives them considerable elasticity.

The round ligaments are usually found in a relaxed condition, so that they are not constantly employed in sustaining the uterus in position. Their function is, nevertheless, quite as important as any other of the sustaining structures of the uterus. When examined minutely, they are found to be chiefly composed of muscular fibers, the outer portion of the ligaments consisting of voluntary fibers, while the inner part is made up of involuntary muscular tissue, similar to that which composes the uterus. The small intestines, as well as the large intestines, usually lie behind the uterus, thus holding it forward. Such efforts as occasion straining and contraction of the abdominal muscles and downward action of the diaphragm, have a tendency to force the uterus backward, bringing the small intestines between it and the blad-

der. The normal relation of the round ligaments to the uterus and the position of the intestines as regards the uterus, is seen in Fig. 1 of Plate N, and the condition resulting from backward displacement of the uterus is well shown in Fig. 2 of the same plate. Nature has wisely arranged matters so that when the strong abdominal muscles contract, thus endangering the uterus by throwing it backward in the abdominal cavity, at the same instant the round ligaments contract also, so as to tilt the body of the uterus forward out of harm's way. This function of the round ligaments was made clear by the author a number of years ago (1887), by numerous experiments and observations. In cases of retroversion, and in some cases of extreme anteversion, as well as in extreme cases of prolapsus, the round ligaments are stretched, and the position of the organs of the pelvis so deranged that these structures cannot perform their normal function, so that the uterus is continually forced lower in the pelvis by such muscular movements as involve contraction of the abdominal muscles, and which, in a state of health, are entirely harmless, in consequence of the action of the round ligaments in preventing the uterus from tilting backward.

It readily appears, then, that the natural and most rational means possible of correcting displacements of this sort is found in the operation for shortening the round ligaments, and thus restoring them so far as possible to a normal condition. This operation was first suggested by Dr. Alexander, of Liverpool, England. The method of operating pro-

posed, however, involved such difficulties that in quite a large proportion of cases the operation was not successful. The author has, however, so far improved the operation that it is now performed with almost unvarying success by surgeons who have had experience with it. Indeed, in the last fifty cases operated upon by the author, in less than two per cent has the operation failed of being entirely successful. It is now several years since some of the first cases were operated upon, and the patients are still enjoying perfect health. Some have borne children without mishap or unusual inconvenience. This operation, when properly performed, not only restores the uterus to perfect position, but in the great majority of cases the displaced ovaries are also restored to their right places in the pelvis; and enlargement and tenderness, the result of chronic congestion and inflammation, speedily disappear under the more favorable conditions established by the operation. The operation is an eminently safe one, and is attended by so little pain that nothing more than cocaine, a local anæsthetic, is ordinarily required, and with the proper after-treatment, a permanent cure may be expected in every case to which the operation is suited. Of course it ought not to be performed in cases in which the uterus is bound fast in its abnormal position by firm adhesions; but the operation has already proved a boon to hundreds of "pessary-pestered" women, who have by its aid been able to escape from the distress and inconvenience incident to the constant wearing of a pessary, and the burden of constant treatment at the hands of successive gynecologists.

CYSTOCELE, OR PROLAPSUS OF THE BLADDER.

In consequence of great relaxation of the vaginal walls, the anterior portion frequently gives way so as to form a sort of pouch just below the pubic bone, which protrudes whenever the patient relieves the bowels or bladder. The posterior wall of the bladder being dragged down with the vagina, the bladder is not completely emptied, and many unpleasant symptoms arise in consequence, frequently chronic inflammation of the bladder. Sometimes this condition is the result of prolapsus of the womb, which crowds the vaginal wall down before it.

Treatment: Hot douches, and the use of cotton supports saturated with tannin and glycerine, the knee-chest position, and care to avoid straining at stool, constitute the chief measures to be employed in the home management of these cases; but in many cases a surgical operation is needed, and an experienced surgeon should be consulted.

The use of the cotton tampon saturated with a solution of tannin in glycerine, a dram to the ounce, is a useful measure in cases of cystocele in which there is an irritable condition of the bladder, as by this means the prolapsed wall of the bladder is supported, securing complete emptying of the bladder, which is one of the conditions essential to a cure.

RECTOCELE.

In this class of cases the posterior wall of the vagina bulges forward, dragging with it the anterior wall of the rectum, thus forming a pouch in which the fæces accumulate, making it difficult to evacuate the bowels. The causes are the same as those of cystocele, being, in the majority of cases, a tear of the perinæum at childbirth.

Treatment: The treatment is the same as for cystocele. Most cases are incurable without an operation. The operation is a very satisfactory one indeed. Out of scores of cases operated upon, we have never failed to get a good result.

NYMPHOMANIA.

This term is applied to a condition in which there is such an intense degree of sexual excitement that the passions become uncontrollable. A female suffering with this affection will sometimes commit the grossest breaches of chastity. Its principal causes are self-abuse and a complete abandonment of the mind to lascivious thoughts. It is sometimes produced by ovarian irritation and by various diseases of the brain. The genitals are often found in a state of great excitement and abnormal enlargement in this affection.

Treatment: Cool sitz baths; the cool enema; a spare diet; the application of blisters and other irritants to the sensitive parts of the sexual organs, the removal of the clitoris and nymphæ, constitute the most proper treatment.

The same measures of treatment are indicated in the cases in which the disposition to practice self-abuse is uncontrollable by other means. In an extreme case of this kind brought to us for treatment a few years ago, we were compelled to adopt the last-mentioned method of treatment before the patient could be cured.

STERILITY.

The most common causes of sterility in women are displacements of the uterus, contraction of the uterine canal, leucorrhœa, catarrh of the uterus, menorrhagia, sexual excess, secret vice, absence of the uterus or ovaries. Women who suffer from great losses of blood at the menstrual period, and those who are excessively fat, are very apt to be childless, or if they become pregnant are likely to suffer miscarriage. In a much larger proportion of cases of sterility than is generally supposed, the difficulty exists in the husband instead of the wife. It may be mentioned here that Dr. Nœggerath, an eminent physician of New York City, after a very extensive investigation of the subject, asserts that what he terms "latent gonorrhœa" is a very common cause of sterility. Dr. N. holds that if a man has once suffered with gonorrhœa, even when months or years have elapsed after a cure has apparently taken place, he is still likely, in case he marries, to communicate to his wife a disease which will render her incapable of childbearing, if he is not himself rendered incapable of procreation as a just punishment for his sin and folly.

Treatment: The various diseases upon which sterility may depend should receive first attention, and all the known causes should be avoided, particularly sexual excesses. It may be properly mentioned in this connection that sexual contact just prior to or within a few days after menstruation is much more likely to be successful than at other times. A physician of experience should be consulted. Sometimes relief can be given by a surgical operation. Sometimes time effects a cure, as shown by numerous recorded cases.

One of the causes of sterility is sexual frigidity, or absence of sexual feeling. This may be the result of self-abuse practiced early in life, but is most frequently due to some form of local disease which requires attention.

Failure of the vagina to retain the seminal fluid may be obviated in extreme cases by the adoption of the knee-chest position, a very old recommendation which has been successfully employed when all other means failed. Infrequent connection is much more likely to be fruitful than the act when often repeated.

COCYGDYNIA—PAINFUL SITTING.

This is an occasional accompaniment of pregnancy, though it often occurs in other conditions as well, and is not confined exclusively to the female sex. The disease consists of a painful affection of the coccyx, or terminal portion of the spinal column. The proper treatment consists in applications of cold, alternate heat and cold, galvanism, and in bad cases, the performance of a surgical operation. .

IRRITABLE OR HYSTERICAL BREAST.

The breast is sometimes the seat of severe neuralgic pain. In other cases, the pain is located in the intercostal nerves, just beneath the breast, particularly upon the left side. We have occasionally met cases in which the whole breast was very sensitive, the patient shrinking from the lightest touch. These difficulties arise from a great variety of causes, chief among which may be mentioned indigestion and disease of the womb or ovaries. The most severe case of irritable breast we ever met, was in the person of a young woman who was grossly addicted to the habit of self-abuse. The left breast in this case was considerably swollen, pulsated violently, and was apparently so sensitive as to cause the patient to scream with pain, even at the slightest touch. The discontinuance of the habit caused an entire disappearance of the morbid irritability within a week, so that the patient was able to strike the breast a full blow without suffering any inconvenience whatever. The form of the disease in which the pain and swelling make their appearance suddenly, is associated with hysteria.

Treatment: The cause must be sought and relieved. Improvement of the general health, and especially of the digestion, if impaired, must receive first attention. If disease of the womb or ovaries exists, it must be cured. Fomentations to the spine and the application of electricity to the breast are very valuable means of treatment, affording relief in most cases.

DYSPAREUNIA, OR PAINFUL CONNECTION.

This is a condition in which there is great pain in connection with the sexual act. No doubt the condition exists much more frequently than is known, owing to the reluctance felt by the sufferers about speaking of the condition to their physician. We have known of instances in which women have suffered for many years so greatly that their lives were rendered wretched, without even mentioning the matter to their most intimate friends, and in some cases not even to their husbands. The causes of pain are various, the most common being local disease, as acute or chronic inflammation of the vagina, fissure of the vagina or rectum, irritation of the bladder or urethra, and sensitive points about the mouth of the vagina. In some cases it appears to be purely a nervous affection.

Treatment: The cause must be removed by proper treatment. If the spasm and pain still continue, finger-shaped plugs of ice may be tried, being introduced into the vagina and retained an hour or two daily if possible, being renewed as often as melted. Soothing ointments may also be employed. Preparations of belladonna and iodoform are specially serviceable. (See appendix.) Hot vaginal douches and tannin and alum injections should be employed daily, as directed for chronic inflammation of the uterus.

When this means has been thoroughly tried, dilatation must be employed. A piece of sponge should be compressed and dried, its size being such

that it can be easily introduced. The secretions of of the vagina will soon expand the sponge, and thus the vaginal orifice will be distended. In cases which resist all of these measures, gradual dilatation must be performed with proper instruments by a competent surgeon. The difficulty is often removed by a cure of disease of the womb. Some time ago we succeeded in entirely curing a patient who had suffered much for many years, by an operation for an ante flexion which existed in connection with the vaginismus.

TUMOR OF THE URETHRA.

The female urethra is subject to a most painful morbid growth which appears in the form of a small vascular excrescence at the mouth of the urethra. These apparently insignificant tumors are exceedingly sensitive and irritable, and not infrequently render the life of the patient wretched with the constant, harassing, burning pain, aggravated whenever the bladder is relieved. The growths are usually single, but sometimes several appear in a group. They are sometimes located so far from the mouth of the urethra as to be invisible, and in these cases are usually not discovered until an examination is made by an experienced physician. We have in a number of cases traced to this source an obstinate, tantalizing pain which had resisted all measures of treatment and was in no way improved, the real cause having been overlooked.

Treatment: The only remedy is a surgical operation. The morbid growths must be removed by the

scissors, the caustic, or the actual cautery. We have found the galvano cautery the most reliable of all means of treating these cases.

DISEASE OF THE URETHRAL GLANDS.

Within a few years the discovery has been made that urethral irritation causing smarting in passing urine and afterward, is in many cases due to disease of two little glands located just within the mouth of the urethra. The remedy is slitting up of the ducts of the glands, and this should be attended to at once, a surgeon being employed for the purpose.

BLADDER DISORDERS IN WOMEN.

Disease of the bladder in one form or another is one of the most common ailments to which women are subject. Various displacements, laceration of the neck of the womb and of the perinæum, holding the urine an improper length of time, and inflammation of the bladder or urinary passages, are among the causes of conditions which frequently seriously affect the health and happiness of women and sometimes make life a burden through the imposed suffering. Irritable bladder, pain in passing urine, and inability to retain the urine or to empty the bladder, constitute the most serious morbid conditions to be met by treatment.

Treatment: Irritable bladder is best relieved by hot vaginal douches, hot fomentations over the bladder, the use of a vaginal tampon to support the base of the bladder, and copious water drinking. The

tampon should be introduced daily, should be a pretty large one, and should be saturated with glycerine or a solution of glycerine and tannin, about one dram of the latter to an ounce of the former. In some obstinate cases a surgical operation, consisting of the dilatation of the urethra, is necessary, and the relief afforded by the operation is often most remarkable.

Inability to retain the urine is often due to an abnormally sensitive state of the bladder, which causes the immediate expulsion of the urine as soon as received from the kidneys. These cases are greatly benefited by the use of hot bladder douches, a little salt being added to the water, about a dram to the quart of water. This treatment must of course be given under the supervision of a physician until the patient becomes skilled in the use of the catheter. The syphon or fountain syringe is the best means of washing out the bladder, and should be used daily. Various remedies may be used to diminish the irritable condition of the mucous surface. When chronic inflammation or catarrh is present, the douche is indispensable to a cure. We also find the use of a decoction of tamarack bark an advantage in these cases. One pound of the bark should be used for each pint of the decoction, and of this the patient should use a tablespoonful three times a day. Drink several glasses of water daily, at least eight to ten glasses being taken in the course of the twenty-four hours.

When there is paralysis of the bladder, a condition by no means uncommon in cases of uterine disease of long standing, associated with catarrh of the

bladder, the bladder douche and electricity are indispensable remedies. The douche should be as hot as can be borne, slightly astringent and disinfectant, containing perhaps a dram of pulverized boracic acid and half a dram of carbolic acid, thoroughly dissolved with a tablespoonful of glycerine to the pint of water. The faradic current is the best form of electrical application, one pole being placed in the vagina or bladder, and the other just over the bladder in front. We have by this means cured some very obstinate cases of the disease.

Warm sitz baths and hot vaginal douches, with astringent vaginal tampons, are useful in all these cases and should be regularly employed. When the bladder trouble is due to antelexion, prolapsus, cystocele, or any other form of local disease, this must of course receive appropriate treatment.

HEMORRHOIDS, OR PILES, AND FISSURE.

These aggravating conditions are often the result of the varicose condition of the veins established by the pregnant condition; but they are more often the legitimate consequence of the long-continued and habitual constipation from which many women suffer most of their lives. Much can be done to alleviate the pain of hemorrhoids and even the intolerable, burning pain of fissure, by proper treatment; but a radical cure cannot be expected without a surgical operation. The best palliative measures are those given on page 431, which should be perseveringly applied.

In cases of fissure, the bowels should be kept very

loose by means of a careful diet and linseed tea enemas, and the patient should remain in a horizontal position for an hour or more after the bowels are moved. On this account it is well to adopt the plan of moving the bowels at night. Gradual or forcible dilatation is usually required to effect a cure in cases of fissure.

CONSTIPATION.

This is a condition much more common in women than in men, which is attributable to their more sedentary habits, and to the habitual neglect of the bowels so common with women. The relation of deficient privy accommodations to this disease has been elsewhere pointed out (page 491). The use of a concentrated diet, including tea, coffee, and condiments, is the leading cause of this condition. Other disorders of the digestive organs, such as catarrh of the stomach and bowels, slow digestion, stricture of the intestines, and atony or partial paralysis of the intestines, are among the causes of the affection. Probably the most common of all causes, however, is the lack of prompt attention to the call of nature to relieve the bowels. The feces are by the peristaltic movement of the intestines gradually carried down to the rectum; and when they reach this point, there is generally a desire to relieve the bowels. If the duty is at once attended to, the habit of evacuating at a regular hour soon becomes fixed. If the call of nature is unheeded, however, the feces are carried upward by peristaltic action into the colon again, so that the desire passes away. As a result of constipation,

absorption of the decomposing fecal matter also takes place to some extent, giving rise to foulness of breath; and the poisoning of the nerve centers occasions great mental depression, headache, confusion of thought, neuralgia, and a great variety of symptoms. One of the most common and painful results of chronic constipation is *hemorrhoids*, or *piles*, the treatment of which has already been considered.

Treatment: Even the most obstinate constipation, not dependent upon stricture of the intestines, can generally be relieved by thorough rational treatment. In the first place, all the causes of the disease must be carefully avoided. If the patient's habits have been sedentary, she must take abundant exercise by walking, riding, etc. Horseback-riding is particularly useful in this disease. Another excellent measure in such cases is vigorous kneading and percussing of the abdomen several times a day for five or ten minutes at a time. Many obstinate cases of constipation have been cured by this means alone.

Eating an orange or drinking a glass or two of cold water before breakfast are simple measures which have often proved effective. The diet should be carefully attended to. Unless there is some disease of the stomach, such as ulcer or painful dyspepsia, coarse food should be used. Very little animal food should be taken. The diet should consist chiefly of fruits and unbolted meal, or grains. A regular time should be appointed to relieve the bowels, whether there is any indication or not. The time at which movement is most likely to be secured is after breakfast. With some persons, however, the movement occurs imme-

diately upon rising. Hot applications to the abdomen, the use of alternate hot and cold applications to the lower part of the spine, the employment of the abdominal girdle, and cool sitz baths daily or every other day, are measures of great value in the treatment of this condition. In the treatment of obstinate cases, we have often secured great benefit by the employment of electricity and Swedish movements. Electricity should be applied directly to the bowels sufficiently strong to occasion slight contraction of the abdominal muscles, the positive pole being placed upon the spine and the negative on the bowels. When the patient has been for a long time dependent on laxatives of some sort, enemata of tepid water should be substituted, while the effect of remedial measures of a more radical character is being obtained.

It is unwise, however, to allow the bowels to become wholly dependent upon the enema. To obviate this tendency and to provoke a desire for movement, small enemata containing a small proportion of castile soap, a little glycerine, as a tablespoonful of glycerine to three or four of water, or ten to twenty drops of spirits of camphor to the same quantity of water, may be used with good results. In many cases, it is better to take the glycerine or camphor enema at night, or both night and morning. It should usually be retained a short time before attempting to move the bowels. This measure is especially useful in cases in which the contents of the bowels are not hard and dry, but there is absence of natural desire for a movement. In cases in which

the stools are hard and dry, benefit will be derived from the use of a small water enema, or an enema of three or four tablespoonfuls of sweet-oil on retiring at night. The bowels should not be allowed to move when the contents have become hardened by long retention without taking a large enema.

Wearing the moist abdominal bandage at night, or even night and day for a week or two at a time, is another very serviceable measure. Free water drinking to the extent of six to ten glasses a day is also to be recommended. Of all measures, however, aside from diet, the most reliance may be placed upon massage of the bowels, thoroughly and systematically administered. In obstinate cases the bowels should be kneaded half an hour three times a day, as directed in the appendix. By means of the simple measures mentioned above, we have relieved cases in which there had been no natural movement of the bowels for from ten to twenty years, the patient having been wholly dependent upon cathartics.

BACKACHE.

This is one of the most constant symptoms of disease of the womb and pelvic organs. Though not a disease of itself, it is so prominent and so troublesome as a symptom that we give it separate notice. The pain is usually described as a dull, constant ache, located in the small of the back or across the hips, often extending around to the front of the body. It is most severe when the patient has been long upon the feet in standing or walking.

Pain in the small of the back is commonly supposed to indicate disease of the kidneys, which is very rarely true.

Treatment: Heat applied to the back, across the hips, by means of fomentations or the application of a rubber bag filled with hot water, is one of the most valuable remedies for relief of this symptom. Alternate hot and cold applications to the seat of pain and vigorous massage to the loins and hips are also most efficient means of relieving this aggravating pain; but it should be borne in mind that permanent relief can be obtained only by the successful treatment of the malady of which it is a symptom, which in most cases will be found to be congestion or displacement of the womb, the proper remedies for which have been described elsewhere.

CHLOROSIS.

The symptoms of this disease are chiefly the following: Pale or yellowish countenance; dark circles about the eyes; palpitation of the heart; lassitude; variable and perverted appetite; depression of the mind; usually suppressed or scanty menstruation.

Among the causes of chlorosis, the first that should be mentioned are unhygienic habits of life, particularly sedentary habits, unwholesome diet, and the unwholesome mental condition produced by the reading of novels and other sentimental literature. The practice of secret vice very often entails upon its victims this serious disease. There can be no doubt that the neglect of physical exercise among girls is a most potent cause of this malady.

Treatment: The first measures to be adopted are those which will secure, as far as possible, the removal of the causes of the affection. The diet should be properly regulated, the patient being required to take such food as will encourage elimination from the system of the products of excretion, which are diminished in this affection in a marked degree, the urine being pale and containing less than the usual proportion of urea. Ripe fruits, milk, cream, oatmeal, and whole-wheat meal are among the most excellent articles of food for persons suffering with chlorosis. Sugar and fats should be avoided. Exercise should be taken in the open air, and the patient should be exposed to the sunshine as much as possible and surrounded with cheerful conditions. No special treatment should be employed for the purpose of bringing on menstruation until the patient's condition has been improved otherwise. Indeed, it is seldom necessary to give this symptom especial attention, as the function will be speedily restored when the cause of its suppression has been removed, together with the other morbid conditions from which the patient has suffered.

No harsh or reducing remedies should be employed; but it is of very great advantage to encourage elimination to a moderate extent. For this purpose the proper employment of water in connection with electricity is of very great service; the wet-hand rub with salt water every day, or three or four times a week, together with sitz baths three or four times a week, and, when possible, the application of electricity two or three times a week. Electricity

may be profitably applied to the body in general in a manner and of sufficient strength to secure contraction of the muscles over the whole body, especially those of the arms and legs. Massage should also be administered in a thorough manner daily. This last measure is one of the most important.

RUPTURE OF THE NECK OF THE WOMB.

This accident is the result of childbirth, in consequence of unnatural rigidity of the womb, excessive size of the head of the infant, malposition, the use of instruments, precipitate labor, and perhaps from other causes. A tear may occur in the neck of the womb without the patient's being aware of the accident at the time. If the difficulty is not discovered and remedied, the usual result is, that, instead of making a rapid recovery after childbirth, the patient remains weak for a long time, and is perhaps confined to the bed on account of the pain and inconvenience occasioned when she attempts to get upon her feet and walk about. She suffers with all the symptoms of congestion of the womb, and after a time suffers with prolapsus, or some form of displacement. Menstruation is likely to be very profuse. This condition often goes undiscovered, even when the patient resorts to a physician for examination and advice. The majority of cases of laceration of the cervix, or neck, of the womb, are treated for ulceration. When the physician makes an examination, he finds the lips of the womb enlarged, gaping, rolling outward, congested, and often covered with granulations. Too often these symptoms are mistaken for inflammation

or ulceration of the womb, and the case is accordingly treated with caustics and various other routine remedies. In consequence of the laceration, dense cicatricial tissue forms upon the raw surfaces, which increases with the lapse of time, especially if the patient is subjected to a course of cauterization. We have met many of these cases in which laceration had existed for periods varying from five to fifteen years, the patients having been invalids during all of this time; and in scarcely a single instance had the real nature of the difficulty been previously discovered. They had been treated for "prolapsus," "inflammation," "ulceration," "elongation of the neck," various displacements, and, in fact, almost everything but the real difficulty.

Treatment: The proper remedy for this accident is the restoration of the torn parts to their natural condition as nearly as possible by a surgical operation. In order to accomplish this, it is necessary to carefully remove all of the products of inflammation and long-continued irritation. The dense, cartilage-like substance which is nearly always present, and which produces a great amount of reflex irritability, such as severe headache, pain in the spine, obstinate dyspepsia, etc., must first be carefully removed; then the parts are brought together and secured by means of fine silver wires. In the course of nine or ten days, nature cements the torn parts together again, and the organ is restored to its normal condition. The satisfaction we have felt in being able to relieve by this simple operation patients who have come to us after having "suffered many things from many

physicians," as well as from their diseases, has been only exceeded by the gratification and relief afforded the patients themselves. We recently received a visit from a patient upon whom we performed this operation a few weeks ago. She had been out of health for several years, ever since the laceration occurred, and had sought relief in vain by traveling, by medication, by local treatment, by every means that could be secured for her by a fond husband, and yet was not improved. After a few weeks of proper treatment, she submitted to the necessary operation, soon after which she went home, and recently returned for a very brief visit for the purpose of showing us what a wonderful change had taken place. Her thin, pale cheeks and bloodless lips were now plump and ruddy with the glow of health. She had gained twenty pounds of flesh within a little more than six weeks. Instead of being compelled to spend most of her time in bed, upon the sofa, or in an easy chair, her step was elastic and buoyant, and she had within a few days walked four miles in a single day without feeling at all fatigued, and none the worse the next day for the exertion. We might mention scores of similar cases in which the change has been equally great.

LACERATION OF THE PERINÆUM.

Judging from the large number of cases of this sort which have come to our notice, laceration of the perinæum is an accident which probably occurs fully as frequent as the form of laceration just described. A slight degree of laceration almost always occurs at

the birth of the first child. When this is very slight, no harm results; but when it extends into the muscular tissue, serious injury is done. The laceration may be so extensive as to bring the two passages together in one. A complete laceration of this sort is usually discovered at the time of its occurrence; but when it is smaller in extent, the rupture is most frequently overlooked. The symptoms of rupture of the perinæum are an unusual amount of soreness and long delay in healing. When the patient attempts to get upon her feet, she soon begins to suffer from the various symptoms of prolapsus, or retroversion. She is unable to walk but a short distance, suffers with pain in the back, weakness, and various other local disturbances. If the rupture is complete, there will be a loss of power to retain the contents of the bowels, especially when they are loose.

Treatment: The proper treatment for this accident, as well as the preceding, is a surgical operation, whenever the laceration is more than very slight. When the laceration is discovered, the operation should be performed within five or six hours of its occurrence. If not attended to then, it should be at a subsequent period, when the patient has so far as possible recovered her usual strength. The operation consists in making raw the surfaces which have been torn apart, and then bringing them together with silver wire. This operation requires not a little mechanical ingenuity; but when properly performed in a case requiring it, affords a degree of relief which in some cases seems almost marvelous. In the case of a lady upon whom we performed the operation a few

months ago, the improvement was so rapid that within a very short time she was able to perform a large amount of physical labor, and could walk long distances without the slightest fatigue, although she had been a wretched invalid since the birth of her child, some eight or nine years previous. This case was somewhat exceptionally rapid in recovery, but in scores of similar cases we have ultimately seen equally good results.

Judging from the large number of these cases which have come under our observation in the treatment of several thousand cases of diseases peculiar to women at the Medical and Surgical Sanitarium, we have no doubt that there are at the present time thousands of women who have been suffering for many years from the effects of laceration of this sort, which might readily be cured by a proper surgical operation. We have dwelt at some length upon this class of cases for the purpose of calling special attention to them. On account of the general neglect with which they are treated, we urge upon every lady who has borne children, and who has any reason to suspect that any difficulty of this sort may exist, the importance of consulting a surgeon at the earliest possible moment, selecting the most competent and reliable surgeon who has had experience in such cases, who may be accessible. The idea which many women entertain that all the ills which they suffer are the natural heritage of woman, and that they are a necessary consequence of motherhood and to be borne with patience and resignation, is an error far too common. Most of the ailments of this class from which

women suffer may be quite readily and effectually relieved.

VESICO-VAGINAL AND RECTO-VAGINAL FISTULA.

One of the most unfortunate accidents of childbirth is a rupture of the anterior or the posterior wall of the vagina, resulting in the formation of a permanent opening into the bladder or rectum. The inconveniences arising from such a condition will be readily understood. While nothing can be done by home treatment to cure or even alleviate these conditions, every woman ought to know that modern surgery affords complete relief in such cases, even when so severe as to seem utterly hopeless, and relief by an operation should be sought at the earliest opportunity, at the hands of a competent surgeon. For want of this knowledge thousands of women have for years suffered more than death from these accidents, when a complete cure might have been effected with very little suffering and no risk.

Various other forms of fistula occasionally occur, but with less frequency than those mentioned. Nearly all are curable by a proper surgical operation.

STRICTURE OF THE WOMB.

A stricture or contraction of the canal of the neck of the womb is by no means an uncommon condition. The stricture is sometimes located at the inner extremity of the canal or the internal os, and sometimes at the external os. In occasional instances, some portion of the canal between these two points is the part affected.

The stricture may be due to flexion, anterior or posterior, to inflammation of the mucous membrane of the canal, or it may be congenital. The leading symptoms are obstructive dysmenorrhœa and sterility. As the result of the obstruction, preventing complete discharge of the menstrual and other secretions of the womb, chronic uterine catarrh finally results, and following this a long train of local ills, prominent among which are congestion of the womb, enlargement, prolapsus and other forms of displacement, disease of the ovaries, and various disorders of the bladder.

Treatment: There is but one proper remedy, viz., dilatation of the cervix, either rapid or gradual, for which the services of a surgeon of experience will be required. All the means recommended for congestion and chronic inflammation of the womb should be employed assiduously.

TUMORS OF THE WOMB.

The most common forms of tumors of the womb are *fibroid tumor* and *polypus*. The first and most prominent symptom is in most cases frequent and severe uterine hemorrhage. These hemorrhages at first occur at the menstrual period, but after a time become more frequent. Hemorrhage is also the first symptom in cases which occur after the change of life. Bearing-down pains, a dull, continuous pain in the pelvis, fullness, weight, tenderness of the sacrum, dragging sensation in the groins and loins, pain in the hips and thighs during menstruation, leucorrhœa—the discharge being either clear, opaque, glairy, pur-

ulent, or bloody—painful urination, retention of urine difficult or painful defecation,—these are the leading symptoms of tumors of the womb, although all these symptoms may be present without the existence of a tumor. When the tumor has reached a considerable degree of development, it may be felt through the abdominal wall; but its presence cannot be determined with certainty except by careful examination by an experienced physician.

Little is known of the cause of uterine tumors, except that they are most likely to occur in persons who have been exposed to the causes of other uterine diseases. They are also more likely to occur in women of middle age or past that period than in young women. A polypus of the womb is shown on Plate C.

Treatment: When either fibroid tumors or polypi are developed on the interior of the womb, nature often effects a cure by causing the tumor to slough off, either *en masse*, or by piece-meal, the dead tissue being expelled. It is often observed that absorption of fibroid tumors takes place after the change of life. The greatest care should be taken to avoid all causes of uterine excitement or congestion. On this account, single persons should not marry, and the married should observe the strictest continence. At the menstrual period, or when suffering with hemorrhage, the patient should receive the same treatment advised for "Profuse Menstruation" and uterine hemorrhage. Rest in bed with hips elevated and knees drawn up, and the hot water or alum douche, are especially valuable. The hot vaginal douche should be

employed twice daily, twenty minutes at a time, and when necessary to relieve pain, fomentations over the pelvis and loins may be applied two or three times a day. The application of hot water bags to the spine and cold bags over the womb for two to five hours a day, is a very excellent means of checking the growth of the tumor and alleviating the accompanying pain. The application of galvanism, the positive pole to the cervix and the negative over the bowels, is a useful measure of treatment, as is also the electric douche (see appendix). The knee-chest position is a source of great relief in many cases by lifting the tumor out of the pelvis and thus relieving the bladder and rectum from pressure. It also retards the growth of the tumor by lessening the blood supply.

Massage, daily salt sponging, the general application of electricity, gentle out-of-door exercise, and other means for improving the general health should be assiduously employed. Care should be taken to keep the bowels regular and the digestion sound by careful diet. When there is constipation, warm water enemata or small enemata of glycerine, soap, or camphor water, should be employed.

A skillful surgeon should always be consulted in these cases, as in occasional instances immediate relief can be given by a surgical operation. As a rule, however, this class of tumors should be let alone, at least until nature indicates that she has prepared the way for their safe removal.

OVARIAN DROPSY.

This disease begins with dull pain low down on one side of the body. Other symptoms speedily follow, chief of which are scanty menstruation, and finally suppression; dragging pain in the bowels; painful and frequent urination; difficulty in moving the bowels; great debility; loss of flesh; enlargement beginning on one side of the body.

Ovarian dropsy consists in the formation of a cyst in the ovary, which gradually enlarges until it attains in some instances a very great size, and is filled with fluid which differs in character in different cases. In some cases there are a number of cysts instead of one. The ovary is also subject to the growth of various other tumors, as fibrous and cancerous tumors. Ovarian dropsy generally runs its course in about four years. The causes are obscure. The difficulty is probably occasioned in many instances by inflammation of the ovary.

Treatment: The medical treatment of ovarian dropsy consists in withdrawing the fluid by means of tapping, or preferably by the use of the aspirator, the employment of galvanism, and electricity in other forms, and improvement of the patient's health in every possible way. In a case which we had under treatment a few years ago, the tumor had attained such enormous size as to give to the patient, naturally a very slight woman, a waist circumference of over forty-four inches. The plan of treatment in this case was removal of the fluid by means of the aspira-

tor, followed by the application of a strong galvanic current over the affected part. The result was that the patient was able to leave for her home after six or eight weeks' treatment without the slightest trace of any disease; and when we met her a year later, she continued well.

The only radical cure for the disease, however, is ovariectomy,—a surgical operation by means of which the diseased ovary, with the cyst attached to it, is removed. This is a comparatively recent procedure, and is one of the most brilliant operations of modern surgery. When the operation was first employed, a very large proportion of those operated upon died; but so many improvements have been made since that time that skillful operators have now reduced the risk of death to five per cent, or five in one hundred. A celebrated English operator recently performed the last of one hundred successive cases without a single death.

Other tumors of the ovary are of much less frequent occurrence, and require the attention of a careful physician.

FLOATING TUMOR OF THE ABDOMEN.

This peculiar form of tumor is usually found in the right side, and most frequently in women who have borne a number of children and in quite rapid succession. The tumor is oval in shape, about the size of a large goose egg, and exceedingly movable. It can usually be crowded up under the ribs where it cannot be felt, but quickly falls again when the patient takes a long breath or stands upright. *

A floating tumor is simply a kidney which has become dislodged from its proper position. The organ seems to be able to perform its functions nearly as well when moving about as when quietly at rest in its proper position.

Treatment: A radical cure cannot be effected; but much may be done to relieve the unpleasant dragging sensation which is usually experienced in connection with this condition by toning up the abdominal walls, for which nothing is better than the daily application of electricity or the alternate hot and cold spray to the abdomen. A silk elastic bandage is also a most effective means for use in cases in which the relaxation is too great to be overcome by the measures of treatment suggested. In a case which we have recently had under treatment, the difficulty apparently disappeared altogether after three or four months.

CANCER OF THE WOMB.

The usual symptoms of this horrible and often incurable malady are as follows: Very profuse watery discharge, of a dirty, pale-green color, always offensive, usually putrescent; sudden, and, in the later stages, frequent attacks of hemorrhage; severe local pain at night at first, in later stages constant; disturbances of digestion, nausea and vomiting; irregular action of the bowels; great mental depression; rapidly increasing debility; sallow countenance; when examined, the womb found to be enlarged, nodular, fixed by adhesions in the pelvis so as to be immovable.

Little is known of the cause of this disease. It has been observed, however, that a laceration of the neck of the womb is usually the starting-point of the malady. Death usually occurs within two years. The appearance of the disease is shown in Fig. C, Plate C. °

Treatment: Almost every imaginable form of treatment has been adopted, but modern medical science is still completely baffled so far as a radical cure is concerned. The most that can be done is to palliate the patient's sufferings by such means as will relieve pain and check the hemorrhage. For this purpose the most efficient measures are those already recommended for use in fibroid tumors of the womb and hemorrhage.

The use of "clover tea," and "Chian turpentine,"—remedies which have become popular within the last few years, offer at least the advantage that they will do no harm if they do no good, which cannot be said of many other popular remedies. We usually allow patients to take "clover tea" freely, but cannot say that we ever saw a case in the least benefited by the remedy.

Something can be done by surgical operations to check the development of the disease, and occasional instances are met in which after thorough removal of the diseased tissue the malady does not reappear, hence a surgeon of experience and skill should be consulted in all cases of this sort. No reliance should be placed upon the pretensions of quacks or "cancer doctors." Their reputation is wholly gained by false pretences.

TUMORS OF THE BREAST.

The female breast is subject to various morbid growths, such as fibrous and cystic tumors, fatty growths, and to simple overgrowth of the breast. The latter condition may be due to an overaccumulation of fat or to an actual overgrowth of the gland itself. The causes of fat accumulation are obesity and masturbation and other sexual excèsses. Overgrowth of the gland itself is due to the organ's not diminishing in size after lactation. In the first variety of enlargement, the breast is large and soft. In the second, it contains nodular masses which are portions of the enlarged gland.

Fibrous and cystic growths begin as small nodules in the gland, which are easily movable, and do not become intimately connected with the gland or the skin covering it. These growths are not at all dangerous, never terminating fatally, although it is possible that their character may in time become changed; they are, however, usually the cause of much mental uneasiness on the part of the patient, who imagines that she has a cancer. It is sometimes not easy to distinguish a cystic or fibrous growth from a cancer, but usually there is a marked difference in the character of the pain, and the mode of growth. The former grows slowly, while the cancer grows rapidly, and usually occasions death within two or three years. The pain of a cystic tumor is of a neuralgic character if present, and is worse at the menstrual period. The pain of cancer is very severe, and of a sharp, lancinating character, shooting down the arm. When

considerably developed, cancer shows its real character by the enlargement of the lymphatic glands of the neck and armpit of the affected side, and by retraction of the nipple, which does not occur in non-malignant tumors. Cancers seldom occur under thirty, while other tumors may appear at any age after puberty, and are most frequent under thirty and in single persons.

Treatment: For overgrowth of the gland, the causes should be removed and pressure applied to the breast by means of adhesive straps or a well-placed bandage. Pressure is one of the best means of checking the growth of all forms of tumors of the breast, not excepting cancer. The best mode of applying pressure is by means of an air-bag held firmly in position by a bandage. Compressed sponge, that is, sponge dried under pressure, is also a useful means. In the absence of either, a simple pad of cotton or wool may be applied over the tumor. The application of ice-bags when there is much heat, is a commendable measure of treatment.

When the tumor becomes troublesome by reason of causing pain, or inconvenience on account of its size, it should be removed. This may often be done by a skillful surgeon in such a manner as to leave scarcely any trace of the operation.

CANCER OF THE BREAST.

This is one of the most frequent and most formidable of all the forms of cancer. The following are the leading symptoms : a sharp, throbbing, lancinating pain often shooting down the arm ; a sense of weight

in the breast; sometimes little or no pain; a hard swelling in the substance of the breast which is first movable, afterward becoming fixed; nipple drawn in; tenderness to the touch; skin over tumor reddish, afterward becoming purple; in some cases the whole breast is moderately hard, there being no distinct tumor; after a time the glands of the neck and armpit become enlarged.

The leading points of difference between cancer and other morbid growths of the breast have been given in the description of "Tumors of the Breast." It is important to note these differences, as a failure to distinguish between a malignant and a non-malignant tumor of the breast has often been the cause of years of unhappiness, and has perhaps quite as often led patients to allow a disease possibly curable at an early stage to reach a degree of development at which all remedies are alike useless.

Treatment: The intractable nature of malignant disease in any part of the body, when well developed, makes it important that prompt measures should be taken upon the first discovery of any symptom affording ground for suspicion of cancer of the breast. The patient should not hesitate and temporize until the chances for a permanent cure are lost. The opinion of the best pathologists at the present day is that the disease is wholly a local affection in its early stages, so that if the diseased part is removed before other parts become infected, the patient has a chance to recover. There is only one method of treatment for use and recommendation in these cases, and that is, thorough removal of the diseased part as soon as sus-

picious symptoms occur. The earlier the removal can be effected, the better. Of the various methods which have been employed, the removal by the knife is in the majority of cases the best, as it is a thorough operation, and can be made painless by means of anæsthesia; it also possesses the advantages of giving the parts an opportunity for healing immediately, thus affording less opportunity for the disease to return. It has been clearly shown that the slow healing by granulation which follows the use of caustics favors the return of the disease. We have seen caustics employed in many cases, and in every instance in which the disease had shown distinct evidences of cancer, the malady returned in full vigor in a short time. No remedy is a positive cure, however, since the same depraved condition of the system which gave rise to the disease in the first place may cause a new outbreak, even though the first be entirely cured.

The public cannot be too frequently and earnestly warned against patronizing the numerous horde of cancer doctors who thrive upon the ignorance of the masses, lauding the virtues and advantages of so-called specifics which are warranted to cure every case. These wonderful (?) specifics, when of any value whatever, are standard remedies which are well known to the regular profession and have been for years. The apparent success which many of these quacks achieve is due to the fact that they do not hesitate to pronounce all forms of tumors to be cancers, notwithstanding the fact that the great majority of tumors are wholly benign.

A person finding a small, painful lump in the breast should consult a skillful surgeon at once, especially if there is any history of malignant disease in the family. In cases of cancer of the breast which are already very far advanced, ulceration having begun and infection of the system having taken place, as shown by the debilitated condition of the patient and enlargement of the glands under the arm, etc., removal of the breast may still be of advantage in prolonging the life of the patient, and adding to her comfort, although there may be no hope of effecting a cure.

The application of ice to the affected part in the form of iced compresses, or better, by means of rubber bags filled with iced water or small pieces of ice, is an excellent means for relieving the severe pain which characterizes the disease, and also for delaying its progress. Frequent freezing of the diseased parts by means of a mixture of salt and pounded ice, in proportion of one part of the former to two of the latter, applied by means of a muslin bag, has been very highly recommended for holding in check the progress of this terrible malady. These modes of applying cold are also useful in checking the hemorrhage which is often severe after the cancer becomes an open sore. Pressure made by means of air bags and a properly applied bandage, is useful as a means of retarding growth, but cannot be employed where there is much tenderness. When the breast is hot and swollen, support of the breast and the application of cold bags or compresses are indicated.

In the appendix will be found prescriptions for a

number of useful applications for use in these cases to remove fetor and subdue pain. When the hemorrhage is not controlled by cold or pressure, soft sponges or absorbent cotton wrung out of hot water may be applied. In severe cases, a physician should be called.

RELAXED AND PENDENT BREAST.

This condition is not usually present except in women who have borne several children. The best remedies are proper support, firm bandaging, and daily hot and cold applications.

ATROPHY OF THE BREAST.

This is a very frequent condition among American women. The causes are chiefly deficient physical development, compression of the breast by corsets, stays, or "forms," and deficient development of the ovaries. When the latter condition is the cause, there is usually an unnatural growth of hair on the upper lip.

Treatment: Removal of causes so far as possible is the first measure, which of course includes improvement of the general health. The only other measures of treatment of any value are daily massage of the breast (see page 467), and sponging with hot water. If there is associated atrophy or deficient development of the womb, uterine massage may also be employed.

IMPERFORATE HYMEN.

As elsewhere explained, the hymen is a membranous structure found at the entrance of the vagina, usually consisting merely of a crescentic fold. Sometimes the membrane is developed to such an extent as to close the vaginal orifice entirely. This may not be noticed until attention is called to the fact by the retention of the menses. In most cases, however, in which there is abnormal development, there is not complete closure, but sufficient to prevent the consummation of marriage. A physician should be consulted.

DEFICIENT DEVELOPMENT OF THE OVARIES.

This condition may be indicated by the absence of the usual changes which occur at puberty, or a masculine appearance of the patient. The growth of hair upon the upper lip is considered a diagnostic sign of special value. Absence of menstruation is also sometimes traceable to this cause, as well as sterility.

Treatment: General and local massage, the daily hot douche, the general application of electricity, the use of the electric douche, massage of the breasts, daily exercise in the open air, and all measures calculated to build up the general health are indicated in these cases. When begun at an early age, the prospect of success is good.

ENLARGED OR RELAXED ABDOMEN.

This condition is usually the result of pregnancy, and is by far the most common in women who have weakened their abdominal muscles by wearing corsets, or stays, and heavy skirts suspended from the hips. It is not likely to occur when the abdominal walls are allowed to become strong and firm by proper exercise, and are made still more so by special manipulations or massage during the period of pregnancy.

Treatment : Daily massage, the alternate hot and cold spray or hose or pouring douche, and exercise of the abdominal muscles by the postural methods described in the appendix, constitute the best of curative measures. As a palliative, the elastic abdominal bandage should be worn.

HYSTERIA.

The symptoms of this disease are very numerous and varied. The following are a few of the most common: The patient laughs or cries immoderately without cause or with very slight cause; has hallucinations; all the senses perverted; morbidly sensitive to light and sound; breasts sensitive; pain in ovary; headache; wandering pains in the chest, abdomen, joints, and spine, especially between the shoulders; loss of sensation in the skin; paralysis of certain muscles; sometimes loss of voice; sensation as of a ball rising in the throat; contraction of the muscles; violent spasms; disorder of digestion with

symptoms of nervous dyspepsia ; changeable temper ; sometimes large quantity of pale urine ; in some cases delirium or stupor.

The above is a very inadequate description of this peculiar disease ; in fact, a complete description would include a list of the symptoms of all known diseases, since there is no known malady which may not be imitated by hysteria. The affection is not, as many people suppose, wholly an imaginary disease, but is really a malady of considerable gravity.

Hysteria occurs most frequently between the ages of fifteen and twenty-five. The most common causes are sexual excesses, novel-reading, perverted habits of thought, idleness, and some form of ovarian or uterine disease. It occurs most frequently among young ladies who have been reared in luxury and who have never learned self-control, but who have had every whim and fancy indulged until self-gratification has come to be their greatest aim in life. It is a notable fact that hysteria rarely or never occurs among the women of uncivilized nations. It is stated that before the war, the disease was unknown among the negro women of the South, though it has occasionally been met with since the emancipation.

Treatment: This disease may be considered as curable in nearly all cases. Indeed it is not, of itself, a fatal malady ; but mental and moral, as well as medical, treatment are essential. The patient must be taught self-control ; her mind must be, by some means, drawn away from herself. The most effective means of interrupting the paroxysm is the applica-

tion of cold in some form to the head and spine. Either the cold pour or the ice pack may be employed with almost certain success. To prevent the recurrence of the paroxysms, the patient's health should be improved as much as possible by abundant exercise in the open air, wholesome diet, plentiful sleep, and general tonic treatment. Sitz baths may be used, in most cases, to advantage, one or two a week, the temperature ranging from 92° to 93° at the beginning of the bath, to 88° or 85° at the conclusion. The bath may last fifteen or twenty minutes with advantage.

With patients whose blood is poor, massage and inunction two or three times a week should be employed. A daily spinal ice pack, continuing from ten to twenty minutes, may be used with advantage. Galvanism to the spine is another useful measure. When there is paralysis of sensation and motion, faradic electricity should be applied to the paralyzed parts.

When the patient complains of tenderness and soreness of the spine, hot fomentations should be applied to the spine daily, or hot-water bags or heated bottles or bricks should be employed in the same way one to three hours daily.

When there are symptoms of ovarian or uterine disease, the proper remedies should be addressed to these maladies. Strong pressure made over the ovaries will sometimes terminate a paroxysm more promptly than any other means.

NERVE-TIRE AND VARIOUS NERVE AILMENTS.

While it is undoubtedly true that many of the nervous symptoms so common among women, the neuralgias, headaches, backaches, nervousness, fidgets, hysterias, etc., etc., are due to local ailments of the womb and ovaries, it is quite an error to suppose that these organs are responsible for all the manifold symptoms which are not infrequently found associated with a greater or less degree of local disease. We have no sympathy with the fashion which is becoming quite too prevalent among physicians, in accordance with which the slightest degree of local disease is considered sufficient to give rise to an infinite number and variety of remote symptoms, and is accordingly made the chief point of attack with a formidable array of tampons, pessaries, lotions, suppositories, etc., with the expectation that all the harassing symptoms in head, spine, stomach, and other organs will take their departure as promptly as if dispelled by a magician's wand. That disappointment usually follows this plan of treatment is evidenced by the hundreds of invalid women who spend their lives in drifting about from one specialist to another until they become disgusted with life, and are in not a few instances absolutely worn to death. Having met scores of such cases, we feel justified in taking this view of the case. [Nerve-tire, or exhaustion of the nervous system, is one of the most common causes of uterine and ovarian disease.] Constant overwork or worry, too much excitement, too little physical ex-

ercise or recreation, and overstimulation in various ways, result in imperfect nutrition of the nerve centers, and then follow any number and variety of secondary disturbances. Spine, stomach, head, womb, ovaries, and numerous other organs, all participate in the cry for more rest and better blood. The neurologist calls the disease, in technical phrase, *neurasthenia*; the gynecologist is too likely to look no farther than the womb and ovaries; and the general practitioner is apt to imagine spinal disease, dyspepsia, "liver complaint," or "malaria" to be at the bottom of all the trouble. Each treats the patient from his partial stand-point, and is disappointed that recovery does not result. Although either one of the supposed causes may be the chief factor at the beginning, long-continued sympathetic disturbance finally results in the establishment of independent disorders, so that the patient must be treated not with relation to one single malady, but with an intelligent comprehension of the whole case. The patient, not her disease or diseases, should be made the object of treatment.

The best course to be pursued with this class of patients is to take them away from their cares and all old associations, and surround them with an entirely new set of influences. They can seldom be treated successfully at home, and can be best managed in a well-regulated sanitarium, where they can have the advantage of a careful regimen, systematic management, and the benefit of treatment administered by trained attendants and experienced physicians, together with as complete mental and nervous repose as possible. Massage, electricity, and proper diet

constitute the most essential means of treatment in these cases, and when skillfully applied, often work most marvelous results.

RETENTION OF URINE.

The bladder should be emptied at least twice in twenty-four hours, the quantity of urine passed during the day being on an average about two pints. When the quantity is very much less than this, or there is no passage of urine for twenty-four hours, the matter should receive immediate attention; and if relief is not speedily obtained, a physician should be called, as retention in women is almost always connected with some disease or displacement of the womb.

Retention may almost always be relieved by a warm sitz bath or a hot vaginal douche, the bladder should be evacuated, if necessary, during the administration of the douche, or while the patient is in the bath.

If relief is not otherwise obtained, the *catheter* should be used to withdraw the urine. A soft catheter is the best. This can be passed by any one, as there is no danger of doing harm with it. The mouth of the urethra is located just above the upper border of the vaginal orifice. The instrument should be introduced about two and one-half or three inches, care being taken to direct it so as to reach the most dependent portion of the bladder, and the outer extremity being held lower than the internal so as to secure complete drainage of the bladder.

A FEW PRACTICAL SUGGESTIONS.

Perhaps a few concise suggestions of a general character should be added to the general and special advice given in the preceding portions of the book respecting the treatment of the various ailments peculiar to the sex, which have been described. First let us emphasize the importance of early attention to local derangements, even though they may be quite slight in character. Nearly all serious maladies of a chronic nature have small beginnings, the first indications of disease being but slight departures from the normal condition. The first symptom of beginning local disease may be a slight leucorrhœal discharge, at first continuing a week or two after the menstrual period, and then becoming continuous from one period to the other, or the patient may observe some slight irregularity of the menses, as a too profuse or too prolonged flow, lengthening or shortening of the interval between the menstrual periods, or an unusual degree of nervous prostration or pain at the menstrual period. In other cases, a pain in the back, especially when the patient is upon her feet, will be the first indication of a departure from health. Sometimes there is no local symptom whatever, but instead, some nervous disturbance, as despondency, or excessive nervousness without adequate cause, perhaps hysteria, fretfulness, confusion of mind, and constant headache, particularly at the top of the head. Sometimes the pain in the back may extend to the whole spine, but it is usually felt most

severely at the small of the back or across the hips, or, as frequently expressed, "at the bottom of the waist." A pain across the lower part of the bowels or the groins is also significant.

All of these symptoms indicate some derangement of the pelvic organs, and should at once receive the most careful attention. A leucorrhoeal discharge, for example, is the result of congestion. A simple whitish discharge indicates nothing more; but a yellowish or offensive discharge indicates a much more grave condition. It should be borne in mind that leucorrhoea itself is not a disease, but simply a symptom of disease; and hence, if a thorough application of the measures of treatment suggested for the relief of this condition does not effect a cure within a few weeks, an experienced physician should be consulted respecting the matter.

In health, the perfect regularity of the menstrual function is such as to entitle it to be regarded as one of the most marvelous of all the mysteries of nature, and no departure from this regularity will occur without some disturbing cause, which may become a source of serious mischief. When the disturbing element is of a temporary character, the vital energies of the system will in many cases bring back the function to its normal condition, and hence a slight deviation is not sufficient cause to give rise to alarm; but a continual repetition of the irregularity should not be allowed to go unnoticed for any length of time, as the disturbing cause may by neglect become so firmly established as to be removed with difficulty, or if this were not the case, a habit of irregularity may

be formed out of which may grow evils of a very serious character.

[The occurrence of pain at the menstrual period, unless very severe in character, is not considered by most women as worthy of attention. When questioning women upon this point in the examining room, we have often received the reply, "Why, certainly I suffer pain when unwell; all women do." It cannot be reasonably supposed that the Creator intended that woman should suffer pain at each performance of the menstrual function. The curse pronounced upon woman for her share in the first transgression imposed suffering and pain at childbirth; but there is no reason to suppose that the curse extended to the function of menstruation, and the fact that the women of barbarous tribes, as our native Indian women, and the strong healthy women whom we find among the emigrants from foreign countries, do not suffer at this time, is sufficient proof that pain is not a necessary accompaniment of the function. The fact that so much pain is experienced by so large a proportion of women when unwell is evidence rather of the great prevalence of local disease in one form or another.

Pain is also the result in many cases of congestion, and is due in the majority of cases to the aggravation of the normal or physiological congestion which occurs in the pelvic organs during menstruation. No woman should be satisfied with the condition of her health so long as she suffers any considerable degree of discomfort during the menstrual week, at least when taking a reasonable amount of care to avoid over-exertion and exposure at this time.

Pain in the lower part of the back is usually regarded as an indication of disease of the kidneys, and we have met hundreds of women suffering with local disease who had dosed themselves for years with various popular nostrums, supposed to be effective remedies for all forms of kidney disease, or had been treated by an indefinite number of quacks who are always ready to seize upon any pretext which will, in the estimation of the patient, warrant them in pronouncing the case one of some grave internal malady which can only be cured by some potent remedy of which they are the fortunate and sole possessors. It is a lamentable fact, also, that many practitioners whose opportunities have been such that the patient has a right to expect more intelligent treatment, frequently accept the patient's diagnosis of disorder of the kidneys based upon the existence of a pain in the lower part of the back accompanied by a sediment in the urine, and treat the disease by internal remedies addressed to the kidneys instead of making such an investigation of the case as would reveal its true character. We may, perhaps, remark just here that pain in the region referred to is almost never indicative of any trouble with the kidneys. The kidneys are located in the abdominal cavity several inches above the point where the pain is usually seated, and local pain is by no means a prominent feature in disease of the kidneys. The "pain in the back," from which so many thousands of women suffer during a great part of their lives, is due to an unhealthy state of the nerve centers of that part of the spine, which results from morbid reflex influences growing out of pelvic diseases,

and investigation of these causes almost uniformly develops the fact that the patient is suffering from prolapsus or retroversion or flexion, or from two or more of these combined, and accompanying active or passive congestion, which may be the result, but is more probably the cause, of the mechanical difficulty. Every woman who suffers with "pain in the back" or weak back, ought to know that her case demands attention; and if the study of this little work and attention to the recommendations made does not readily secure relief, an experienced specialist should be consulted with reference to the case.

The last remark also applies with equal force to the great share of so-called cases of "spinal disease," "spinal irritation," and to many of the cases of obstinate headache, hysteria, and other nervous disorders which are so frequent among the women of the present day. It is true that these disorders sometimes arise from disturbances of the stomach and other vital organs, but when there are no marked evidences of other functional disturbances to which the symptoms named may be fairly attributed, pelvic disease may be reasonably suspected.

Exercise and Rest. — On both of these points we wish to offer a few remarks, the importance of which is well understood by every specialist who has treated professionally any large number of severe chronic cases of pelvic disease. While it is true that a great number of cases of local disease in women arise from improper exercise, as heavy lifting, taking long walks at the menstrual period, etc., it is equally true that not a few cases may be fairly attributed to deficient

exercise of the muscles, giving rise to a feeble condition of the abdominal walls and the natural supports of the uterus, thereby entailing upon the individual the liability to serious and perhaps life-long disease. Careful regulation of the habits in relation to exercise is a matter of paramount importance in all cases of this class. In general, we may say that patients whose pelvic troubles are the result of indolence or a too sedentary life, must accustom themselves to a more active life as the first step toward recovery; while persons whose disorders are the result of too much or too violent exercise, will at first require a period of rest more or less prolonged, according to the nature of the case. When there is much pelvic pain which is greatly aggravated by the upright position, the patient must be kept in bed, unless she has already been there too long, until the pain subsides so that she is comfortable in a horizontal position. This recommendation is particularly important in cases in which there is active local inflammation, as in cases of chronic cellulitis or ovaritis, and many cases of so-called inflammation of the womb. We need not mention that while a patient is being kept in bed it is important that various means should be employed to obviate the evil effects of inactivity, such as thorough massage of the whole body daily, and massage of the bowels two or three times a day, frequent sponge baths, a carefully regulated diet, etc., together with the employment of all other means which are indicated in the particular case. It is not necessary that the patient should be kept all the time in bed, as she can be assisted to the sofa for an hour or two

each day, or she can be drawn into another room or out of doors in a rocking-chair, where she can lie upon a lounge or cot, and thus receive the benefit of change, fresh air, and sunshine, while still maintaining the horizontal position.

The great advantage of rest in these cases is that the pelvic vessels, which have long been overcharged with blood, are allowed to empty themselves, and by remaining empty their relaxed walls are allowed to contract so that the congestion may be overcome. The difference in regard to the amount of blood present in the blood-vessels in a horizontal position as compared with the upright may readily be seen by a comparison of the two hands while one is allowed to hang by the side and the other is held with the arm stretched out in a horizontal position. The veins of the pendent hand will be observed to be full and distended with blood so that they stand out quite prominently, while they can hardly be distinguished in the hand held in a horizontal position, which latter will be observed to be pale and almost bloodless, while the other becomes red from the distension of its blood-vessels. Sometimes we have even found it an advantage for a time to increase the effect of the horizontal position by raising the foot of the patient's bed. In all cases care should be taken to keep the head rather low. We have known patients to completely neutralize the good results which should have been obtained from the horizontal position by keeping themselves bolstered up in bed in such a way as to drain the upper part of the body into the pelvis, thus increasing rather than diminishing the local blood supply.

After the patient has been kept in bed a sufficient length of time, which may vary from a week to six or eight weeks, or even longer in cases attended by active inflammation, she should be gradually brought upon her feet. The rapidity with which the upright position is reassumed should be carefully graduated according to the length of time that the patient has been in bed. If the patient has been confined to her bed only a week or two, she may on the first day after getting up take a few steps, perhaps walking across the room once or twice during the day. The next time the distance may be doubled, and thus the amount of exercise may be increased from day to day until a considerable distance is walked. If the patient has been long confined in bed, say from three to six months or more, she should be satisfied with simply assuming the upright position the first time.

The feet should be covered with thick woollen stockings, and with nothing additional unless it be a pair of light slippers without heels, as the body is much more easily and firmly supported when the whole sole of the foot receives its weight. The length of time the upright position is maintained at the first attempt must depend somewhat upon the patient's feelings, but should not be longer than two or three minutes, and in some cases even less. During the time, the patient's mind should be occupied in some pleasant way, so that the attention may not be too much directed to the effort, as otherwise the excessive tension of the nerves and muscles might result in greater harm than good. The next day the length of time may be considerably increased, and the patient may

take one or two steps perhaps, with the aid of an assistant, or even two assistants if necessary. The patient should not be alarmed if the limbs sting and tingle, and perhaps become numb in feeling and mottled in appearance, or even should the heart palpitate, and the old backache and headache return, together with numerous other symptoms which may have been subdued by the confinement in bed. These symptoms will almost invariably return at the first attempt to exercise, but will quickly subside when the recumbent position is assumed. When this is not the case, an interval of a day or two should be allowed to elapse before the attempt is repeated.

From time to time, the amount of exercise should be gradually increased until the patient is able to take long walks without suffering any unpleasant consequences; but the recumbent position should be resorted to for some time after exercise has been taken. When the amount of pain induced by exercise is considerable, the patient will find great relief by lying with the head low and the hips elevated by means of two or even three pillows, so that the pelvis may be thoroughly drained. Nearly all women who suffer with backache and pain across the lower portion of the abdomen, or other forms of pelvic pain, may find relief in the same way. Many ladies to whom we have suggested this procedure, have assured us that they were able to perform a very considerable amount of work by taking rest and relieving the pelvis from its superabundant blood in this manner, from ten to fifteen minutes, once or twice during the day. When the patient is suffering from retroversion or a consid.

erable degree of prolapsus, the knee-chest position, which is illustrated and explained under the head of "Postural Treatment," furnishes the most thorough and prompt relief from pelvic pains brought on by exercise.

Ladies suffering with weak backs, often think they cannot walk, and so settle down to a very indolent and sedentary life, which only results in an aggravation of their difficulties in the end, as already explained. Those who find themselves getting into this sad condition should at once begin a regular course of walking exercise, walking each day a given distance, which should be gradually extended from day to day, as the ability to walk is recovered. Little difficulty will be found in adopting this suggestion when the above hints respecting rest after exercise are carefully heeded.

We regard walking as one of the most healthy of exercises, and consider its practice indispensable to the perfect cure of uterine diseases. Walking is altogether too little practiced by American ladies, and this perhaps accounts, in part, for the great frequency of pelvic disorders in this country. It is well known that pelvic disease is much less common among the well-to-do classes in England than in this country; and this may be fairly attributed to the almost universal practice among English ladies of taking a large amount of walking exercise nearly every day of their lives. We also observe the same fact among the middle classes of France and Germany. The active muscular life led by the women of the lower classes of nearly all European countries, has been made a matter of

comment by all observing travelers interested in matters pertaining to health.

We were particularly struck with the robust and healthy appearance of the peasant women of Germany and Austria, who engage in all kinds of physical labor in company with their husbands and brothers, plowing, harvesting, digging ditches, working on the streets in the large cities, driving wheelbarrows heavily laden with brick and mortar, or carrying the same in pails or baskets upon their heads, and, in fact, doing nearly all the drudgery and hard work of the country. These women were always remarkably straight and square-shouldered, and firm in their poise. We never saw one of them with her hand upon her back, and do not suppose one could be found who would confess to a backache or a sideache; and yet we would not wish to be understood that the women of Germany, and other continental countries where similar customs prevail, are wholly free from the troubles from which their American sisters suffer so much.

Aside from the simple dietary, out-of-door life, and active physical habits to which European women of the lower classes are accustomed, their mode of life is by no means such as can be considered conducive to health. The feet are usually well clad in stout boots, while the head is totally uncovered; but the hips are burdened with a load of heavy skirts tied tightly about the waist, outside of which is worn a stiff bodice, or outside corset, which is tightly laced. As a natural consequence of this wretched mode of dress, prolapsus, even to the most extreme degree, is not uncommon, and various other mechanical displace-

ments occur. Nevertheless, so robust is the general health, and so firm and vigorous the muscular development, that the majority of these women are enabled to endure the double burden of a very laborious life and the dragging weight of their heavy skirts without suffering from any form of local disease whatever; and those who do suffer in this way know nothing of the torturing pain endured by American women under similar circumstances. In the hospitals we frequently met women who had for years been engaged in vigorous physical labor, notwithstanding the fact that the womb was prolapsed to such a degree as to be protruding into the external world; and when questioned upon the point, it appeared that they only sought relief from the inconvenience of their condition, rather than from any serious pain which they had ever suffered. Much more might be said upon this subject, but we have already dwelt quite fully on the importance of exercise in the body of this work.

Before leaving this point, however, one caution should be made. Ladies suffering with pelvic affections, should, as a rule, take their exercise on a level surface. Going up or down stairs, especially long flights of stairs, should be avoided as too violent exercise to be taken without injury until the muscles have been strengthened by milder forms of exercise. It should be recollected that experiments upon exercise have shown that the effort required to lift the body perpendicularly, as in ascending a ladder or steep stairway, is twenty times as great as that required to move the body over the same distance on a level surface. That is, as much effort is required to ascend one foot as is

required to walk twenty feet on a level. Walking on a level surface is also, as a rule, a much better form of exercise than carriage riding, the jolting of a carriage frequently causing much more serious pain than the effort required in walking even quite a long distance. Horseback-riding must be wholly forbidden to ladies suffering with any form of pelvic disease, though a partial exception may be made in the case of those who are accustomed to riding, and are willing to ride at a pace no faster than a very slow walk. Dancing must be wholly interdicted, as a form of exercise too violent for this class of patients, and in many ways liable to result in injury. We have met many cases of the most serious local disease which could be traced directly to the practice of dancing, especially when engaged in at the menstrual period. The use of the feet in pumping an organ or running a sewing-machine, is also a form of exercise which must be scrupulously avoided in most cases of this sort.

When the patient finds that she has taken too much exercise at any time, as indicated by a considerable increase of pelvic pain, resort should be at once had to the recumbent position, elevation of the hips, hot douche, and hot and cold sponging of the limbs and middle portion of the body. The latter is a very effective method of relieving pelvic pain, and is so simple a means of treatment that it can be taken by the patient herself, and with very little preparation. All the materials necessary are two large, soft sponges and two vessels, one containing hot and the other cold water. The temperature of the hot water should be as high as can be borne without positive

discomfort. The body should be first rubbed with a sponge wrung quite dry from the hot water, for one-half minute, and then with the sponge from the cold water for about the same length of time. The application should be continued five to fifteen minutes. The results are better when the treatment can be given by an attendant, although the absence of an assistant should not prevent its being employed when necessary. After the last application of cold water, the body should be quickly dried, and the patient should be wrapped in warm blankets, and remain quiet for a few hours. A large folded towel, wrung out of tepid water and covered with oiled silk or several folds of flannel, should be placed over the abdomen at night when so much exercise has been taken during the day as to cause considerable pain. The body should be quickly rubbed with the hand dipped in cold water after removing the compress in the morning. This treatment may be taken with advantage after the alternate hot and cold sponging. A prolonged warm sitz bath, taken just before retiring, is also a very effective means for relieving the consequences of over-exercise, though it cannot be taken so conveniently as the measures of treatment just described.

Position during Sleep.—The position of the body during sleep is a matter of importance, as it often involves, with very sound sleepers, an unchanged position for at least one-third of the twenty-four hours. This time is amply sufficient for the production of results of a character favorable or adverse to the production of diseased conditions; and when disease is present, the mere matter of position is sufficient to

present an obstacle to recovery, or to be an important auxiliary to proper treatment. As a rule, patients suffering with pelvic troubles should sleep with the head low, or at any rate not higher than the pelvis, and in some instances it will be found an advantage to lift the hips by a pillow, or even to elevate the foot of the bed so that the whole body will form an incline toward the head. A patient suffering with retroversion or flexion should lie upon the face; a person suffering with anteflexion or anteversion should habitually lie upon the back. A patient suffering with simple prolapsus may lie on either face or back, as either position may be found the more comfortable. We may also mention here that lying upon the face is preferable to the dorsal position during the first two or three weeks after confinement, as the uterus is then heavy, and through its abnormal weight is liable to become tipped backward before the process of involution is completed. It would be injurious, however, for the position upon the face to be maintained continuously for two or three weeks, as anteversion would be likely to result.

Diet.—The regulation of the dietary is a matter of no small consequence in the management of the majority of cases of pelvic disease. We have no space here to enter into the full subject of dietetics as related to pelvic disorders, but would offer a few hints which our experience warrants us in saying will be found serviceable; and first we wish to call attention to the mistaken notion that women suffering from nervousness and general debility arising from long-continued pelvic disease, require a large propor-

tion of animal food, particularly flesh. Our observation and experience in the treatment of several thousand cases of this class have led us to the conclusion that the free use of a flesh diet is in these cases decidedly objectionable. The stimulating character of the diet increases the nervous irritability, and in a variety of ways aggravates the pelvic trouble. The dietary for the majority of patients suffering with disease of the pelvic organs should be chiefly composed of fruits and grains, with a liberal addition of milk. The whole-grain preparations are particularly serviceable, and the use of oatmeal, cracked wheat, graham flour, or wheat-meal, and other similar preparations, especially when combined with the free use of fruits, either raw or cooked according to the taste of the patient or the requirements of the digestive organs, is in the highest degree conducive to the proper activity of the bowels,—a matter of the utmost importance in the treatment of disorders of this class. Inactivity of the bowels almost uniformly accompanies pelvic disease, frequently preceding the uterine disorder, and operating as a cause in its production; and whatever will contribute to the removal of this abnormal condition, must be considered of more than trifling importance in the treatment of these affections.

It should also be remarked that the relation between the blood supply of the uterus and its appendages and the portal system, is such that whatever disturbs the latter necessarily affects the former; and hence such errors in diet as occasion torpidity of the liver, or other disturbances of this organ, and thus af-

fect the portal circulation, also affect the pelvic organs injuriously. Hence a person suffering from pelvic disease should carefully avoid the use of condiments of every description, the excessive use of fats and sweets, confectionery, alcoholic drinks, tea and coffee, rich food, and, in fact, whatever articles of diet may be considered unwholesome, clogging, or indigestible.

An article of diet which we have taken great satisfaction in recommending to many as an accompaniment for other food, and in some cases, for a short time, as an almost exclusive dietary, is hot milk. We frequently recommend patients to take from one to three glasses at each meal in connection with other food. The milk should be taken as hot as can be swallowed without discomfort, and when taken in this manner, is an important aid to the digestion of other food, besides itself contributing in no trifling degree to the supply of nourishment required by the patient. Milk is an article of diet which is perhaps too little appreciated. It contains all the elements of nutrition, is easily digested and readily assimilated, and when obtained from healthy cows, is wholly unobjectionable. Its digestion is considerably increased by heating it to nearly the boiling point, although it is not necessary that it should be scalded in order that its good effects may be obtained.

As before remarked, a woman who finds herself suffering with any marked symptoms of pelvic disease which are not readily relieved by some of the measures suggested, should promptly consult a competent physician. Unfortunately, the number of pretentious and unprincipled persons who are engaged in the

practice of medicine is so great that it is not always easy for a person not medically educated to determine whether any particular physician is competent and reliable or not; but no woman who appreciates the value of health and the grave nature of the majority of the maladies which affect the pelvic organs, will place herself in the hands of any physician without first thoroughly informing herself respecting his ability in the treatment of the particular class of ailments from which she is suffering. As a rule, the family physician is the best man to consult, at least at first. If he is a true physician, he will, if not prepared to manage the case in a thoroughly satisfactory manner, recommend the patient to some specialist whose skill can be relied upon.

Many of these cases, perhaps we might say the majority of those which have become very chronic or are otherwise of a serious nature, can be treated with thorough success only where the patient can receive the advantage of the most improved appliances and the experience and skill which naturally result from an extensive practice in this class of cases, together with the complete regulation of the whole course of life, which is often of primary consequence in cases of this class, as well as the rest from home cares and duties, and the changed habits and surroundings which are essential in quite a large proportion of cases.



APPENDIX.

Diseases of Children.

 We have not space in this volume for an extended treatise on the disorders of infancy and childhood, and can only consider in the briefest manner possible the simple measures of treatment which are adapted to home use in the most common of the various maladies incident to the earliest years of life.

Hints about the Diet of Children.—As most of the disorders specially common to infancy arise from bad feeding, it is appropriate to commence this section with a few hints respecting the dietary of young children. We may begin by saying that nearly all the advice generally given by “old nurses” is wrong. There is no department of the nursing art in which so little common sense is usually displayed as in this. The suggestions offered below are chiefly quoted from the “Home Hand-Book,” a larger work in which this whole subject is considered at length.

As a general rule, an infant should be fed once in two or three hours during the day-time, and once at night until one month old. After this time it should not be fed at night, and it should take its food no more frequently than once in three hours during the day-time until four months of age. Between four and eight months, the intervals should be gradually prolonged to four hours. After this time the fourth meal should be gradually dropped off, so that at twelve months the child will take its food but three times a day.

In order to break children of the habit of eating in the night, when mothers have been in the habit of nursing them at all

hours of the night as well as in the day-time, a little warm water may be given in the nursing bottle instead of allowing food. This will often satisfy the child's cravings so that it will go to sleep.

Milk is the natural and proper food for children from infancy to the age of twelve or eighteen months. Starchy foods cannot be digested, owing to the fact that the digestive element of the salivary secretion is not formed in sufficient quantity during the first few months of life to render the child able to digest farinaceous foods, such as potatoes, rice, fine-flour bread, and the like.

If the child is deprived of its natural food, a healthy wet-nurse should, if possible, be secured, at least until the child is two or three months old. When a suitable wet-nurse cannot be secured, milk from a healthy cow constitutes the best food. Care should be taken in the selection of cow's milk, that being preferred which is obtained from a cow which has calved two or three months previously. The health and care of the cow, particularly the character of her food, are matters of importance which should receive attention. Cow's milk should be diluted at first to one-half, the proportion being gradually increased as the child's stomach is strong enough to bear it. Pure water, lime-water, barley-water, and thin well-boiled and strained oatmeal gruel, may be used to dilute the milk.

Cow's milk, or other fluid food, is best given to an infant with a proper nursing bottle. The best forms of nursing bottles are those which are furnished with rubber caps. The cap should be removed and well cleansed with warm water in which soda or saleratus has been dissolved in proportion of a teaspoonful to a pint, each time the bottle is used. Both the nursing bottle and the rubber nipple should be kept immersed in a weak solution of soda when not in use. They should also be cleansed the second time just before the child is fed. Neglect to observe this precaution is one of the most common causes of stomach disturbances.

The diet of the mother while nursing is of very great importance, as anything that will disturb the system of the mother will affect that of the nursing infant more or less. Her food

should be nourishing, simple, and wholesome. Stimulants of all kinds, whether in the form of alcoholic drinks or irritable condiments, should be carefully avoided.

Children should never be given sugar-teats, candies, sweetmeats, cheese, nor pastry. The habit many nurses have of feeding an infant sugar and water every hour or two during the first one or two days of its life, is a practice which cannot be condemned too strongly.

Overfeeding is a much more frequent error than the opposite. Very frequently children are allowed to take too much at a time. This is the most common cause of vomiting in infants. Fortunately, their stomachs are so constructed that the surplus food may be easily expelled ; but sometimes this is not the case, and often very serious disorders of digestion result. The child should be removed from the breast when its hunger has been appeased, and should not be urged to take more when it is evidently satisfied.

The child should never be allowed to sleep at the breast, or with a nursing bottle to its mouth.

The child should never be put to the breast to stop its crying. Children cry in consequence of disturbances of the stomach much more often than from hunger.

Special care must be taken in the warm season of the year of children that have been weaned or that have been raised on the bottle, to avoid feeding sour milk or milk that has become slightly changed by standing.

Many mothers have sacrificed their children by attempting to rear them upon the various patented foods sold in the stores. A majority of these foods are starchy preparations which contain little or no nourishment valuable for infants. Some of them are useful, but not more so than well-boiled oatmeal or graham gruel with the addition of cow's milk.

The proper time for weaning a healthy infant is at about one year of age. Very weakly children sometimes require longer nursing. The custom practiced by some women of prolonging the nursing period to two years or more is injurious to both mother and child.

The process of weaning should be conducted gradually. At

the age of eight or ten months the child may be fed bread and milk, or oatmeal porridge once a day, this article being substituted for mother's milk.

Convulsions.—This is one of the most alarming of the diseases of infancy, but is not often fatal. The treatment should be prompt and energetic. Plunge the child as quickly as possible into a hot bath, pouring cool water upon the head and chest. When the convulsion is the result of indigestion, the child should be made to vomit, if possible, by drinking warm water or half a glass of water into which a teaspoonful of mustard or powdered alum has been stirred. When constipation and flatulence are the cause, give an enema of soap-suds. When the fontanel is prominent or bulging, the cold applications to the head should be very vigorous; ice may be used. When there is considerable fever, cool sponging of the body should be employed, together with cold injections into the bowels. When the fontanel is depressed, showing lack of blood in the brain, the convulsion may sometimes be relieved by inverting the child; that is, turning its head downward. This is often recommended indiscriminately for convulsions, which is a grave error, as it might produce a fatal result in convulsions produced by congestion. The application of hot fomentations to the head is also useful in these cases. "Inward fits" are relieved by fomentations to the bowels, hot enemas, or giving the child a few teaspoonfuls of water containing a drop or two of peppermint essence.

Night Terrors.—Give a hot bath, with cold to the head, an enema of soap-suds or warm water, an emetic when the stomach is loaded with undigested food, and fomentations to the bowels when distended by gas. A teaspoonful of powdered alum or mustard in half a glass of water will produce prompt emetic effects, if the child can be made to take it. Avoidance of excitement, simple food, out-of-door life, and gentle treatment are important as preventives.

Pain in the Bowels.—Very common in young infants, the symptoms being, moaning cries, corners of mouth drawn down, twitching of face during sleep, bloated abdomen. Regulate diet carefully, keep limbs and extremities warm and bowels open by resort to enema when necessary, and apply hot fomentations to

bowels three or four times a day. A drop or two of peppermint essence or anise in a little hot water will often give relief.

Worms.—Thousands of children are injured for life, and many killed by constant dosing for worms when the difficulty is of an entirely different character. In the great majority of cases the symptoms which are supposed to be those of worms are really nothing more than symptoms which will only be aggravated by the use of the various worm medicines generally employed in such cases. When there is any suspicion that the child is troubled with worms, the bowel discharges should be carefully examined daily, for several days in succession. If no worms or segments of worms are found in the stools, it may be safely concluded that the symptoms observed arise from some other cause. At any rate, a physician should be consulted before any active measures of treatment are adopted. Too often, however, we are sorry to say, physicians are in the habit of adopting the suggestions of mothers and nurses, consenting to treat infant patients for worms without sufficient grounds for so doing.

The various popular worm nostrums should never be administered. No drug of sufficient potency to destroy worms should be given without the advice of a physician.

"Pin worms" may be cured by large enemata of quassia tea. Make a decoction of a large handful of quassia chips boiled for an hour or two in a gallon of water. After emptying the bowels well by means of a warm water enema containing a little castile soap, inject as large a quantity as possible of the quassia tea. This remedy rarely fails, but should be repeated two or three times on successive days to insure success.

Vomiting.—A very common affection in children. It is usually the result of overeating, or of eating too fast. It is frequently occasioned by sickness which results from rocking in the cradle or tossing in the arms, both bad practices. Acidity of the stomach also frequently occasions vomiting. In these cases, the curds thrown up are sometimes very large, especially when cows' milk is used without dilution. Sudden vomiting without preceding nausea is a grave symptom, indicating brain disease.

Vomiting may usually be checked by regulating the quantity and quality of food. If it comes from sour stomach, a little

lime-water should be used after each meal, one or two teaspoonfuls being taken in double the quantity of milk. When the child seems to suffer considerable distress, hot fomentations or a hot flannel should be applied over the stomach.

Eruptions.—Various eruptions are common in children. A variety most peculiar to small children is that known as *strophulus*, the two varieties of which are termed red-gum and white-gum respectively. Nettle-rash is another very common form of eruption in children. Most of these arise from indigestion, and are readily cured by improving the digestion. For temporary relief, bathe the affected parts with a solution of bi-carbonate of soda, a teaspoonful to a pint of water. This generally relieves the intense burning. In severe cases, the parts affected may be covered with cloths wrung out of the solution. Salt and water will sometimes give prompt relief.

Mumps.—This disease is attended with little danger, cases of *metastasis* being very rare. At the outset, apply cold or ice compresses to the neck. When the cold becomes unpleasant, apply a hot fomentation for a few minutes. A warm sitz bath once or twice a day gives relief by diverting the blood from the affected gland. When there is much fever, give tepid or cool sponge baths. Keep bowels open by enema of warm or tepid water. The diet should consist of gruels, and well-cooked fruits and grains. No animal food, with the exception of milk, should be taken during the existence of the disease.

Measles.—In mild cases, very little treatment is required except such as is necessary to make the patient comfortable. Good nursing is much more important than medicine. If the eruption is slow in making its appearance, or is repelled after having once appeared, the patient should be given a warm blanket pack. The cold pack is most commonly used in Germany, but we have obtained equally good effects from the warm pack, and it is much more comfortable for the patient.

When the fever rises high, it should be subdued by tepid sponging, cool compresses to the abdomen, renewed as frequently as they become warm, and the cold enema. Cold packs and affusions, although in no degree dangerous, and highly recommended by many eminent physicians, are rarely required.

The patient should be allowed cooling drinks, as much as de-

sired. During the disease, a simple but nutritious diet should be allowed, but stimulants of all kinds should be prohibited. Milk, fruits, and grains may be taken in sufficient quantity to satisfy the patient's appetite, but meat should be prohibited. Good ventilation of the sick-room should be maintained throughout the disease, and care should be taken to prevent, so far as possible, the contraction of the disease by those who have never had it.

German Measles.—This disease so closely resembles the preceding in character that the treatment is essentially the same.

Whooping-Cough.—When the disease is prevalent, special care should be taken to prevent children from taking cold, as this is the most active predisposing cause. Good ventilation with uniform temperature, are essential conditions, but not easy to secure in all cases. Fomentations to the chest, hot and cold applications to the spine, and a warm blanket pack three or four times a week are among the most useful measures of treatment. The inhalation of warm steam is also useful. Nothing is needed in the line of medicine more than a little saleratus water prepared as follows :—

Saleratus, half a teaspoonful; water, a large cupful; flavor with a little sugar and cinnamon or wintergreen essence. Take three or four times daily. The child should be urged to restrain the cough as much as possible.

Diphtheria.—This disease appears in three forms : catarrhal, croupous, and malignant. The symptoms of the first form are so slight that the disease may be easily mistaken for an ordinary sore throat, and, indeed, in some cases it may be impossible to distinguish readily between this form of the disease and a simple inflammation. The symptoms are as follows : slight fever; malaise; dryness in the throat, with slight pain in swallowing; glands of throat swollen; mucous membrane red and covered with small grayish-white or whitish-yellow spots; frequently nausea and vomiting. When an epidemic of diphtheria is prevalent, many cases present the above symptoms with none more serious, making a good recovery within a few days; but it should be recollected that a mild case may give rise to a more serious form of the disease, or may develop, in time, symptoms of a more serious character.

The most prominent symptoms of the croupous form are as follows : all the symptoms of the simple or catarrhal form intensified ; more severe fever ; great heat in the head ; confusion of mind ; intense pain in the throat ; one or more whitish patches to be seen on the mucous membrane of the throat, adhering so tenaciously that when torn off the surface bleeds ; a peculiar, offensive odor of the breath ; tongue heavily coated. The membrane which appears in this form of the disease may extend over the whole throat, and even into the nasal cavity and larynx. It has appeared upon the mucous membrane of the eyes, and upon portions of the body where the skin has been denuded, as well as over the whole intestinal tract. When the larynx is affected, the symptoms of true croup are added to those of diphtheria.

In the malignant form, we have added to the foregoing symptoms, an extreme degree of prostration ; weak and slow pulse ; sodden face ; neck greatly swollen, with its skin shiny ; exceedingly offensive breath ; extensive false membrane ; and an almost irresistible fatal tendency. When the malignant form is assumed, the disease progresses so rapidly that death often occurs within a few hours from the beginning of the attack. The whole system seems to be invaded by the germs which give rise to the malady, and there is no time for anything to be accomplished by remedies. As just intimated, the disease is believed to be due to the invasion of the system by certain poisonous germs, the character of which has been the subject of much careful study.

TREATMENT : The increasing prevalence of this disease and its alarming fatality make it important that every mother should know something of its nature and the best way to manage it. Give simple diet, preferably milk and gruels. Control the fever by cool sponging. At the outset of the disease, apply ice to the throat, and give the patient small bits of ice to swallow very often. When the membrane begins to loosen, use steam inhalations, and hot fomentations to the throat. Solutions of carbolic acid and chlorate of potash, and the solution of chlorinated soda, are also useful remedies which may be used with the atomizer. Lime-water and vinegar may be used with benefit to aid in dissolving the membrane.

Prescriptions for several excellent lotions to be used in the

treatment of this malady, may be found under the head of "Miscellaneous Remedies and Prescriptions."

We ought to add that this disease is of so serious a nature that a competent physician ought to be called in every case as soon as the nature of the malady is recognized, or where there is doubt as to its character. Attention should also be called to the fact that the disease is extremely contagious, and consequently that the greatest precaution should be taken to prevent its extension to other members of the family, or to other persons in the neighborhood. The patient should be placed in a room secluded from the rest of the house, and should be visited only by the nurse and physician. The case should be promptly reported to the health officer of the city or district, so that the public may be properly warned. Disinfectants should be used for the purpose of destroying the infectious character of the discharges of the patient. They are best applied by being placed in the vessel in which the discharges are received, so that the latter may be rendered harmless at once. After the patient has recovered, the same measures of disinfection mentioned in connection with the treatment of scarlet fever should be employed. Several disinfectant lotions are mentioned in the section to which the reader has already been referred for prescriptions used in this disease. More complete directions for treating this disease will be found in our larger medical work. *

Scarlet Fever—Scarlatina.—Mild cases require only a simple diet, thorough ventilation, the use of tepid sponge baths, and cool compresses to the bowels or wet sheet packs, and perhaps cool enemata, and other measures for reducing the temperature, together with good nursing. If the eruption is a little slow in making its appearance, or shows a tendency to recede after it has appeared, a warm full bath and sponging of the skin with hot water or hot and cold sponging, together with warm drinks, are the measures to be employed. When the other symptoms are very severe, ice compresses should be applied to the throat if possible, and the patient should be given pieces of ice to hold in the mouth. When the breath is very foul, a solu-

* "The Home Hand-Book of Domestic Hygiene and Rational Medicine."

tion of chlorate of potash, two or three drams to the pint, or permanganate of potash, half a teaspoonful to the pint of water, may be used as a gargle. Severe cases, and all cases in which complications occur, should be placed under the care of a skillful physician.

During the illness, the greatest pains should be taken to prevent the communication of the disease. After recovery, everything in and about the sick-room should be burned or thoroughly disinfected. Burning sulphur, used for bleaching purposes, is the best disinfectant for use. To disinfect the room, place a few shovelfuls of wet sand on the floor in the middle of the room. Place in the sand near together several bricks, and on the bricks two or three hot stove-covers, bottom upward. Put the sulphur on these, and there will be no danger of fire. A hot iron kettle answers equally well. Use two ounces of sulphur to each one hundred cubic feet of air to be disinfected. Close the room tightly for twenty-four hours, then ventilate for two days, and scrub and repair the walls.

Chicken-Pox.—This disease is so rarely fatal that little more than good nursing is required. The child should be kept quiet, and when the fever is high, the body should be cooled by tepid sponging or cool compresses applied over the bowels and changed frequently. The diet should be light until the fever is entirely subdued.

Infantile Dyspepsia.—The symptoms of dyspepsia, or indigestion, in infants are: vomiting; diarrhea; constipation; alternate constipation and looseness of the bowels; green or clay-colored stools; sour or fetid stools; curds in the stools; emaciation; irritability; moaning cry; feverishness; capricious appetite; and various symptoms which are usually attributed to worms.

A great share of the various illnesses from which children suffer are due to disorders of digestion. Indeed, a great share of the fatality during the first five years of life may be fairly attributed to derangement of the digestive organs, either directly or indirectly. Of the various symptoms mentioned as indicating disorder of digestion in a young child, vomiting is the most common. When the contents of the stomach are acid in consequence of fermentation, the vomited matters are sour. This

condition may usually be traced to the use of sugar, confectionery, or starchy food. As elsewhere remarked, infants are unable to digest farinaceous or starchy food until after the teeth are developed, and hence such food is pretty sure to induce acid fermentation of the contents of the stomach, and also to cause disturbances in the bowels, with green and offensive discharges. These discharges are often preceded by stools containing lumps of curd, indicative of imperfect digestion. The imperfectly digested food remaining in the bowels, causes irritation and frequently inflammation. Clay-colored stools indicate an inactive state of the liver or obstruction of the bile-ducts, which is frequently the result of the extension of the stomach, or intestinal catarrh; into the biliary passages. Long-continued disturbance of digestion gives rise to marked evidences of wasting. The child becomes thin and wrinkled, weak and peevish. The countenance assumes an old look. Often the weakened condition of the child gives rise to a morbid condition of the nervous system, and convulsions make their appearance, which may terminate fatally, or the child may die of exhaustion. Sometimes persistent vomiting is the most serious feature of the case, continuing until even water will not be retained upon the stomach. The principal cause of deranged digestion in children is inattention to the rules for diet which have been laid down elsewhere in this work. Sometimes the disorder is the result of indigestion or some other functional disturbance in the mother. Nervous disturbances in the mother are particularly productive of indigestion in nursing infants. All of these causes should of course receive careful attention; and if they are of such a nature that they cannot be removed, a healthy wet-nurse should be employed. Nursing bottles, especially those with long tubes, are a frequent cause of indigestion in children, owing to the fact that they are seldom properly cleansed. It is, in fact, next to impossible to cleanse a long rubber tube so thoroughly that it may not be a means of communicating the germs of fermentation to the milk taken by the child. Milk from unhealthy cows or from farrow cows is another frequent cause. Inattention to the cleansing of milk-pans, or the use of milk which has stood so long as to be slightly changed, must be mentioned as a not infrequent cause of indigestion in children.

TREATMENT: The child should be fed at regular intervals, the length of which should be determined by its age. It should be fed a proper quantity, and at proper times. The habit of feeding children as frequently during the night as during the day is a mistaken and injurious one.

When the child shows symptoms of indigestion, careful inquiry should be made respecting the nature of its food, the manner of feeding, etc. If the cause is ascertained to be in the mother, either a healthy wet-nurse, whose child is about the same age as that of the patient, should be employed, or, when this cannot be done, as is often the case, cow's milk should be used. The milk should be taken as fresh as possible. It ought not to be more than two or three hours old, or fresher if it can be obtained. Attention should also be given to the length of time since the cow has calved. The milk of cows, being richer in caseine and fat than human milk, should be diluted with pure water, or, as we prefer, with barley-water, or thin oatmeal gruel, well boiled and strained through a coarse cloth. For a very young child, milk should be diluted one-half. As the child grows older, and its digestive powers increase in strength, the quantity of water may be diminished.

In cases in which there is much acidity, and the discharges from the bowels are green or fetid in character, lime-water may often be used with advantage, one part lime-water being added to three or four parts of milk. In some cases it is sufficient to give the infant one or two teaspoonfuls of lime-water in double the quantity of milk after other food has been taken. In severe cases in which the digestive organs of the child seem to be unable to digest milk in any form, strong beef tea, white of egg dissolved in water, barley-water, or thin oatmeal gruel may be employed, either separately or combined. We have succeeded in cases which seemed utterly hopeless, in restoring children by beginning with egg water, made by dissolving the white of an egg in a glass of tepid water, and gradually adding a little milk, oatmeal gruel, beef tea, or other food, as the child became able to bear it. In many cases, it is necessary to give food in very small quantities, sometimes not more than a tablespoonful or two at a time, and at intervals of an hour or two. When there is evidence that

the nursing-bottle is at fault, and the evidence may be considered good whenever the nursing-bottle is employed, the bottle should be discarded at once, and the child should be fed with a spoon. Nursing-bottles with long tubes should be avoided as in the highest degree dangerous. We have never yet found one which was not in a condition unfit for use. In extreme cases, in which the stomach rejects food altogether, it should be allowed to rest for a time, the child being nourished in the meantime by means of nutritive enemata of beef tea, egg and milk, and other preparations suitable for such use. Whey is an article of food which may be serviceably employed in cases of extreme feebleness of digestion. It should be made by adding a small quantity of infusion of rennet to a sufficient quantity of new milk or skim milk according to the requirements of the case; milk from which at least a portion of the cream has been removed being preferable in some cases. When the child is too weak to take food, it may be fed with a feather as well as by means of the nutritive enema, or food may be squirted into the back part of the mouth by means of a dropping tube. The last-mentioned method of feeding is especially serviceable in cases of extreme weakness from indigestion with sore mouth. Children that cannot be induced to take other food, may sometimes be nourished by means of thin strips of lean, juicy steak, which should be placed in the mouth for the infant to suck. The scraped pulp of rare steak may also be used advantageously in some cases. We ought perhaps to add that special attention should be given to the maintenance of the animal heat in the care of young children, especially those that are feeble or exhausted by wasting disease of any form. The stomach and bowels of those whose digestion is feeble must be kept warm by extra coverings of flannel. The position of the child during feeding should also receive attention. Infants should never be fed while lying down, but should be held in a half upright position. The more feeble the infant, the more important this suggestion.

When constipation is present it should be relieved if possible by the employment of massage to the bowels two or three times a day.* The enema should be used in preference to physic; and when necessary, a little glycerine, castile soap, brown sugar, or

common salt should be added to the water, as directed under the *Miscellaneous Prescriptions*. An enema of sweet-oil is also effective.

In addition to the above measures of treatment, all useful means for improving the general health, such as saline baths, general massage, sun baths, inunctions, exercise in the open air, etc., should be carefully employed.

Diarrhea.—This is by far the most common of all the ailments of infants and small children ; and during the months of July, August, and September, it is responsible for a very large proportion of all the cases of death among this class. The bowels naturally move much more frequently in infants than adults, the number of daily movements varying from three to six. The stools should be deep yellow in color, of the consistency of thick gruel, and nearly or quite odorless. Any great departure from these characteristics should be considered abnormal and demanding of attention. While the teeth are coming, there will often be a slight tendency to diarrhea, which need not give rise to alarm, as it is productive of no injury.

The symptoms of diarrhea in young children are, in addition to increased frequency of stools, solid, curdy, green, bilious, mucous, or bad-smelling stools ; pain, as shown by the drawing up of the legs ; in chronic cases, pale, haggard countenance, emaciation, enlarged and tender abdomen, red and glazed tongue, pasty stools.

TREATMENT : Errors in diet should be carefully sought for and removed. Sometimes it is necessary to substitute farinaceous food for milk for a few days. This is especially the case when the motions contain many undigested curds with mucus, showing intestinal irritation. Of farinaceous foods, the best is well-boiled oatmeal gruel, carefully strained through a cloth. Sometimes graham gruel, prepared in the same way, is preferable. Broths, soups, beef tea, and similar foods must be strictly forbidden. The persistent use of beef tea is often productive of diarrhea. When the discharges are very sour and frothy, the use of lean, raw meat may be resorted to with benefit. The meat should be prepared by scraping out the pulp of a piece of tender steak with a table knife. When thus used, meat

should be relied upon as the sole article of diet. It should be given about once in three or four hours in such quantities as can be retained. Meat usually renders the stools very offensive,—a fact which should be borne in mind as unnecessary alarm might be experienced at this symptom. The exclusive meat diet should not be long continued, but the original diet of milk or oatmeal gruel and milk should be restored as soon as possible. The yolk of egg, beaten, either with or without milk, is of service in these cases, as also the use of lime-water with milk, in the proportion of one or two tablespoonfuls to the glass of milk. Equal portions of milk and lime-water may be used when the motions are very sour and green. The green color acquired by yellow stools by exposure to the air and the action of urine, is not significant.

Most cases of diarrhea in children require nothing more than a proper regulation of the diet to secure quite prompt recovery. Other simple treatment may be given with advantage, however, but we are acquainted with no remedy which acts with so much promptness and certainty in checking the discharges and relieving pain as the hot enema. The enema may be given as often as every two or three hours for a few days, and the temperature should be as hot as can be borne without discomfort, say 105° to 115° F. The quantity should be as large as possible without increasing the pain. Fomentations to the bowels are to be used in all cases in which there is pain or griping in the bowels, as shown by a disposition to draw up the legs. When the food passes through unchanged, measures which build up the general health, such as salt-water baths, gentle massage, daily inunction with olive or cocoanut oil, abundance of fresh air and sunshine, which are essential in all cases of chronic diarrhea, must be chiefly depended upon. The intertrigo, or irritation of the skin, of the thighs and buttocks, which often occurs in cases of diarrhea attended by acrid discharges, is best treated by carefully cleansing the parts several times a day with warm water, and then applying lycopodium powder.

The use of opium, so commonly prescribed in cases of diarrhea, is in our opinion productive of much harm, and should be avoided. There are a few simple remedies which prove

useful in obstinate cases ; but it is much better that these should be used only when prescribed by a physician, as much harm comes from the perpetual dosing, even with simple remedies, to which so many babies are subjected.

Dysentery.—The first symptoms are vomiting and purging, the action of the bowels being almost constant. The motions are at first natural, but soon become slimy and streaked with blood. The stools are passed with much straining and tenesmus. The desire to move the bowels becomes almost constant, and is not relieved by a passage. The pain increases ; the abdomen becomes swollen and tender ; the mouth becomes sore ; there is much restlessness, fever, and rapid emaciation ; the discharges become offensive ; and complications of the lungs or brain may occur. This disease is a grave one in small children, especially when epidemic, as is often the case. Its causes are foul air, sewer gas, impure water, bad feeding, insufficient clothing, and perhaps we should add excessive heat, dampness, and dentition, although we do not think the latter causes sufficient in themselves to occasion the disease in the absence of all the other causes mentioned. Feeding children unripe fruit, pastry, and foods to which their digestive organs are not adapted, must be regarded as among the most frequent exciting causes of the disease when there is no epidemic influence to which to attribute it.

TREATMENT : Warm baths, fomentations or large poultices to the bowels, and the hot or cold enema are the best measures of treatment to be suggested. The remarks about diet, etc., made in connection with treatment of diarrhea, apply, for the most part, to this disease as well. When other articles of diet fail, the use of meat juice should be resorted to. If the child does not begin to mend speedily, a careful and competent physician should be called.

Prolapsus Ani.—Prolapsus of the rectum is a not uncommon condition in small children. The condition is usually the result of habitual constipation of the bowels or severe attacks of dysentery or diarrhea, the child being neglected and allowed to strain for a long time. The use of purgative medicines is also a very common cause.

TREATMENT : The diet must be so regulated as to produce loose

movements of the bowels. Graham flour, cracked wheat, oatmeal, and a plentiful supply of fruit, particularly apples, figs, and prunes, should enter very largely into the dietary. The child should be made to relieve its bowels while lying upon its back, and each time the anus protrudes it should be bathed with cold water and pressed back with the oiled finger. When the prolapsed bowel does not return readily, the child may be held for a moment with the head downward. The bowels should be kneaded daily to encourage loose movement, and the general health of the child should be improved by a tepid sponging over the surface of the body. It is sometimes necessary to keep the child in bed with its feet raised upon a pillow for several weeks. After the anus has been once prolapsed, great care should be taken to prevent a recurrence of the condition. Chronic and severe cases sometimes require a surgical operation.

Incontinence of Urine, or Wetting the Bed.—The most common causes of this affection in children are the excessive use of liquids, lying on the back during sleep, loaded bowels, general debility, and the practice of self-abuse. It is sometimes also associated with other serious diseases, as gravel, and various diseases of the kidneys.

TREATMENT: The cause should be sought for and removed. When other causes have been removed, the quantity of fluid should be carefully restricted, especially during the latter part of the day, and the child should be prevented from lying upon the back by tying a roll of cotton or something of similar character over the spine in such a manner as to prevent the child from turning upon its back. In occasional instances the child may have fallen into the habit from carelessness or laziness. In such cases the proper remedy is, of course, correction.

Colds.—Young children are very subject to colds for several reasons. First, their skins are unusually active and vascular, containing a much larger proportion of blood than those of adults; second, they are usually improperly clad, the middle portion of the body being so clothed as to induce perspiration, while the arms and legs are left bare; third, they are rendered susceptible to cold air or draughts by being kept in too warm an atmosphere and not sufficiently exposed to out-of-door air. This suscepti-

bility to taking cold may be greatly diminished by accustoming the child to a daily bath at a temperature of about 75° to 80°. A little salt added to the water has a tonic effect upon the skin. The idea that such a bath is weakening has been proven fallacious in thousands of instances by sensible mothers who have adopted this plan of protecting their children from one of the greatest causes of fatal disease between the ages of two and five years. The habit of breathing through the mouth, which children are very apt to contract, may also be regarded as a frequent cause of taking cold, especially during the winter months. Children should be taught to inhale through the nose, the natural channel for the inspired air, as by passing over the large mucous surface the air is warmed before entering the lungs, thus preventing congestion, which might give rise to serious inflammation of the air passages, or to pneumonia.

TREATMENT: When a cold has been contracted, the child should be at once placed in a hot blanket pack, directions for which are found in this appendix. If the little one is restless, one or both arms may be left out, but should be well covered with a dry blanket. After twenty or thirty minutes, the patient should be taken from the pack, placed between dry blankets, covered warm to continue perspiration, and allowed to go to sleep. The inhalation of the vapor of warm water is very soothing to irritated mucous surfaces. If the throat is the part particularly affected, a local pack should be applied, which may consist of a towel wrung out of hot water until it will not drip, and then applied to the throat and covered with dry flannels of sufficient thickness to retain the heat. A pack should be applied to the chest in a similar way, when the cold seems to have settled upon the lungs. When the child has a hard, dry cough which is somewhat persistent, the blanket pack may be applied once a day for several days, and fomentations may be applied to the chest several times a day, the surface being rubbed with tepid water when the hot cloths are removed. Hot drinks of various sorts are useful to induce a perspiration during the pack, and also to encourage secretion of the pulmonary mucous membranes.

Nasal Catarrh.—This disease is the result of frequently neglected colds. It is most likely to make its appearance in an

aggravated form in scrofulous or rachitic children, in whom the ichorous discharge from the nasal cavities produces an irritation of the skin of the upper lip, which ultimately results in thickening of the lip, producing one of the characteristic facial indications of scrofula in children. The disease is often neglected with the idea that the child will outgrow it, which is a very mistaken notion, as the malady is very seldom outgrown, though it passes through various stages, ultimately becoming in some cases less noticeable and offensive than when attended by a profuse discharge. Among the unfortunate results of this affection are, caries of some of the bones which project into the nasal cavity, deformity of the nose resulting from the division of the septum, extension of the disease into the throat and larynx, producing serious impairment or entire loss of the voice, and extension to the ears through the eustachian tubes, causing deafness. It ought to be mentioned in this connection that deafness is more frequently produced in this way than in any other.

TREATMENT: Contrary to the general opinion respecting this disease, it is among the most readily cured maladies, provided the patient can be placed under proper conditions, and can receive proper treatment. Among the necessary conditions, we mention as of the greatest importance, warm clothing, which should be carefully regulated according to the season of the year. As a general rule, flannel should be worn next the skin both summer and winter. The skin must be kept active and vigorous by tepid or cool baths or saline baths. The general health must be improved by a simple but nourishing diet, proper exercise, sufficient sleep, and attention to all matters pertaining to health. It is also of special importance that the diet should be of an unstimulating and unclogging character. Animal food should not be taken too largely, and condiments and rich food should be avoided altogether. The bowels should be kept loose and regular by the abundant use of fruits and coarse grains. The patient should be protected as much as possible from sudden changes of temperature. This is best accomplished not by keeping the patient in-doors, but by hardening the skin and accustoming it to daily out-of-door exercise at all seasons of the year.

In addition to the above measures, much can be done toward

effecting a cure by the use of proper local applications. When there is an abundant discharge, a cleansing lotion, followed by a lotion of an astringent character, should be used daily by means of the air atomiser. When the discharge is offensive, a disinfecting lotion should be used in addition to the cleansing and astringent lotions. When there is dryness of the membrane and scabs are formed, cleansing and stimulating lotions should be employed. A number of excellent preparations to be used in various forms of catarrh, are given in this appendix under the proper heading.

Earache.—This affection, so frequent in infancy and childhood, is by no means so trivial as is generally supposed. Children often cry for hours from the intense pain of earache, without the cause being discovered; and when the discovery is made, they continue to suffer for many hours longer for want of the application of the proper means for relief. Severe pain in the ear is generally due to inflammation of the middle ear, or eardrum, and when neglected, is likely to give rise to incurable deafness; hence the importance of giving prompt attention to the matter, and employing such measures as will prevent the frequent recurrence of the affection. One of the most ready means of affording relief is the application of heat. Either dry or moist heat may be applied, sometimes one and sometimes the other being the most efficient. The ear may be syringed gently with warm water with advantage. If the inflammation does not readily yield to this simple means, an ear specialist should be consulted. When a specialist cannot be obtained, the best physician near at hand should be summoned. Among the various domestic remedies, steaming the ear, poulticing with onions, or dropping into it a few drops of laudanum, are the most efficient. We noticed in Germany that acute inflammation of the middle ear is usually treated with excellent results by the application of ice to the ear. Ice controls inflammation, and fomentations relieve the pain. They may be used alternately with advantage, ice being applied most of the time, and fomentations once in an hour or two.

Discharge from the Ear.—A chronic discharge from the ear is usually found to be the result of acute inflammation ac-

companying scarlet fever, measles, and diphtheria, or of a cold. A discharge of this kind is almost always indicative of disease of the middle ear, with rupture of the ear-drum.

TREATMENT: The ear should be thoroughly washed each day with soap and water, or a solution of carbonate of soda in water, two teaspoonfuls to the pint, which should be carefully introduced into the ear by means of a syringe, the syringe having attached to its nozzle a short piece of rubber tubing so as to prevent any possibility of injury to the ear. The temperature of the water should be about 100°. After washing, powdered boracic acid should be blown into the ear with a rubber tube.

Sore Eyes.—The mucous membrane is red and swollen, and covered with a viscid secretion by which the lids are stuck closely together in the morning or when the child awakens from a long sleep. The white of the eye is very greatly congested, and the mucous lining of the lids has a velvety appearance.

TREATMENT: The eye should be protected from bright lights, and should be given as perfect rest as possible. A spray of tepid water should be used several times a day by means of the fountain douche. Small compresses wet in cold water and changed every few minutes, should be used when the inflammation is quite severe; and should it be very intense, the cloths should be cooled by laying them on blocks of ice. A solution of alum, one or two grains to the ounce, may be dropped into the eye once or twice a day with advantage.

Croup.—This very fatal malady is far less common than is generally supposed. It is perhaps slightly contagious, and rarely recurs in the same individual. It attacks most frequently children in their second year, rarely occurring after the fifth year. The leading symptoms are, during the first twenty-four hours those of an ordinary cold with slight sore throat; on the second day the cough becomes "brassy" or "clangey;" breathing is hard and prolonged, accompanied by a characteristic sound, of a crowing character; fever; great and constant distress for breath; eyes glassy and lips livid; inability to speak in a natural tone, voice being very hoarse or husky, or entirely absent. No attempt should be made to treat a case of this kind, without the aid of an experienced physician.

False or Spasmodic Croup.—This disease closely resembles the preceding in many points, and is often mistaken for it. Its chief points of difference are, little or no fever, spasmodic difficulty in breathing, with intervals of entire relief from the croupy symptoms, sudden appearance of the affection, usually at night, and as sudden disappearance. It generally begins with a slight cold.

TREATMENT : Hot and cold applications or fomentations to the throat, and hot and cold applications to the upper part of the spine. A sponge wrung out of hot water is a ready means of fomenting the throat. In the absence of hot water, the moist sponge may be heated by placing it upon a hot stove. An emetic of salt water or a half teaspoonful of powdered alum given in syrup or honey will sometimes aid in cutting short an attack.

Sore Mouth.—Of the several varieties of sore mouth to which young children are subject, thrush and aphthæ are the most common. The former is a parasitic disease, due to the growth upon the membrane of a vegetable fungus, appearing as small white spots scattered over the mucous membrane. Aphthæ appears, first as small blisters, which soon become small ulcers and show no tendency to heal. Thrush is most common in infants during the first six weeks of life. Aphthæ may occur at any period of life. The most common cause is disturbance of digestion by the use of sweets.

TREATMENT : Avoidance of causes, cleansing the mouth thoroughly by means of a moist rag after each feeding, and applying three or four times a day with a soft rag or a camel's-hair brush a solution of chlorate of potash, one-half dram to the ounce, or better still, a solution of borax in glycerine, one-half dram to the ounce. Attention should also be given to the general health.

Sore Throat.—The ordinary sore throat with which children are so apt to suffer as the result of taking cold, may be readily cured in most cases by the employment of hot fomentations or hot and cold applications to the throat two or three times a day, a warm bath, and a cold pack to the throat at night. The throat should be bathed in cool water in the morning, and should be well protected during the day. If taken in time, most attacks of sore throat will be cut short in a few hours when thus treated.

APPLICATIONS OF WATER AND ELECTRICITY.

Water, applied in the various modes in which it may be, is one of the most potent of remedies. Wrongly applied, it may be productive of great harm. The following are a few general rules which should always govern its use :—

1. Never bathe when exhausted or within three hours after eating, unless the bath be confined to a very small portion of the body.
2. Never bathe when cooling off after profuse sweating, as reaction will then often be deficient.
3. Always wet the head before taking any form of bath, to prevent determination of blood to the head.
4. If the bath be a warm one, always conclude it with an application of water which is a few degrees cooler than the bodily temperature.
5. Be careful to thoroughly dry the patient after his bath, rubbing vigorously, to prevent chilling.
6. The most favorable time for taking a bath is between the hours of ten and twelve in the forenoon.
7. The temperature of the room should be at about 85° or 90° F.
8. Baths should usually be of a temperature which will be the most agreeable to the patient. Cold baths are seldom required. Too much hot bathing is debilitating.

The Sponge or Hand Bath.—Soft water, a soft sponge, or a linen or cotton cloth, and one or two soft towels, or a sheet, are the requisites. The hand may be used in the absence of a cloth or a sponge for applying the water.

The temperature of the bath should not be above 95°, and 90° is generally better. Most people can habitually employ a temperature of 75° or 80° without injury, and some receive most benefit from a still lower temperature. The use of a much lower temperature is not commonly advisable, however, and is often productive of great injury.

Begin the bath, as usual, by wetting the head, saturating the

hair well. Wash the face, then the neck, chest, shoulders, arms, trunk, and back. Rub vigorously until the skin is red, to prevent chilling; for even when the temperature of the room is nearly equal to that of the body, the rapid evaporation of water from the surface will lower the external temperature very rapidly unless a vigorous circulation is maintained.

After thoroughly bathing the upper portion of the body, turn the attention to the lower portion, continuing the rubbing of the upper parts at brief intervals to prevent chilliness. As soon as the bathing is concluded, envelop the body in a sheet and rub dry, or dry the skin with a towel. When the surface is nearly or quite dried, rub the whole vigorously with the bare hand.

The bath should not be prolonged more than ten or fifteen minutes. Five minutes is sufficient to secure all the benefits of the bath, and even three minutes will suffice for a very good bath.

Persons who chill easily will find it better to bathe only a portion of the body before drying it. Some will even find it necessary to retain a portion of the clothing upon the lower part of the body while bathing and drying the upper part.

Weakly patients may receive this bath with very little disturbance, even in bed. Only a small portion of the body should be uncovered at a time, being bathed, dried, rubbed, and then covered while another part is treated in a similar manner.

Equal parts of alcohol and water or vinegar and water may be used when slight stimulation is required.

Wet Sheet Pack.—Two or three comfortables or thick blankets, one woolen blanket, and a large linen or cotton sheet, are the articles necessary. It is important to be certain that the sheet is sufficiently large to extend twice around the patient's body. More blankets are required in cool weather and by weak patients. Spread upon a bed or straight lounge the comfortables, one by one, making them even at the top. Over them spread the woolen blanket, allowing its upper edge to fall an inch or two below that of the last comfortable. Wet the sheet in water of the proper temperature, having gathered the end so that it can be quickly spread out. Wring so that it will not drip much, place its upper end even with the woolen blanket; and spread it

out on each side of the middle sufficiently to allow the patient to lie down upon his back, which he should quickly do, letting his ears come just above the upper border of the sheet, and extending his limbs near together. Wrap the patient carefully first with the sheet and afterward with the blanket, taking care to exclude air.

For a hot pack a blanket should be used wrung from water hot as can be readily borne.

Sitz or Hip Bath.—For this bath a common tub may be used, by placing a support under one edge to elevate it two or three inches ; but it is better to use a tub made for the purpose, which should have the back raised eight or ten inches higher than the front, to support the back, the sides sloping gradually so as to support the arms of the bather. The bottom should be elevated two or three inches. The depth in front should be about the same as that of a common wash-tub.

Enough water is required to cover the hips and extend a little way up the body. Four to six gallons is about the proper quantity.

A very good plan for administering the bath, and one which will be applicable to most cases, is this : Begin the bath at 92° or 93°. If a thermometer is not at hand, pour into the bath-tub three gallons of fresh well or spring water, and then add one gallon of *boiling* water. This will give the desired temperature. After the patient has been in the bath ten minutes, cool it down to 85°, which may be done by adding a gallon of well water. Continue the bath five minutes longer, then administer a pail douche or spray, at about 85°, and wipe dry, as directed after a hand bath.

Foot Bath.—Any vessel sufficiently large to receive the feet, and enough water to cover them to the ankles, is suitable for this bath. The temperature should usually be 100° to 105° F. If the water is cold, it should not be more than one-fourth of an inch deep.

The alternate hot and cold foot bath is a very valuable remedy for cold feet. It is given thus : Place the feet in hot water—100° to 110°—two or three minutes. Then withdraw them and plunge them quickly into a bath of cold water 60° or less.

After two or three minutes, restore them to the hot bath. Thus alternate three or four times, and conclude by dipping the feet quickly into cold water and wiping dry. This bath produces most powerful reaction.

The foot bath is applicable in the treatment of headache, neuralgia, toothache, catarrh, congestion of abdominal and pelvic organs, colds, and cold feet. It is very useful as a preparatory for other baths, and as an accompaniment of other local applications.

Wet Girdle.—This was a favorite remedy with the early German hydropathists, and it is a very useful appliance when properly employed, though it has been much abused by excessive use. To apply it well, a coarse towel about three yards long is the most convenient for use. Wet one-half of this in tepid water, wring until it will not drip, and apply it to the abdomen, placing one end at the side; and bringing it across the front first, so that two thicknesses of the wet portion will cover the abdomen. After winding the whole tightly around the body, fasten the end securely with pins or with tapes attached for the purpose. Cover all with several folds of flannel. This is especially useful for obstinate constipation and nearly all forms of pelvic disease. If irritation of the skin is produced, omit the bandage for a few days occasionally.

The Vaginal Douche.—The fountain or syphon syringe is much to be preferred as a means of administering this treatment. The force of the stream should not be so great as to occasion the slightest discomfort. The syphon syringe should be elevated not more than three or four feet above the patient; in very sensitive cases, less. The position of the patient should be horizontal, with the hips elevated. The tube should be introduced as far as possible, and should be directed backward, so as to direct the stream of water behind the neck of the womb. The length of time occupied in the bath and the amount of water used, will depend upon the condition of the patient. In general, we may say that one to four or five gallons should be used. The temperature of the water must also depend upon the special conditions requiring treatment. In the majority of cases it should be from

100° to 105° F. In special cases a higher temperature is required. Cold water is rarely indicated.

In occasional instances, disagreeable sensations will follow the first use of the hot douche, but this may be avoided by employing water of a moderate heat, and gradually increasing the temperature.

The patient should lie in a horizontal position across the bed, with the hips elevated upon a pillow and drawn to the edge of the bed, each foot being supported in a chair. The water may be conducted into a pail beside the bed by means of a rubber cloth the upper edge of which is placed under the patient, the lower being folded so as to direct the water properly. It is important that the attitude of the patient should be comfortable as possible, as the position must be retained for some time, fifteen to twenty-five minutes, usually, and the remedy must be employed a long time. A special table with an opening in the center may be constructed for taking the douche, or a simple frame may be made to set into a full bath tub, folding back out of the way when not in use. One of the most convenient appliances for the purpose is a bed-pan so constructed that the water is conveyed away to a pail by the bedside by means of a rubber tube, the body being comfortably supported by an air cushion. An ordinary bed-pan can be used by attaching a tube for carrying away the water or by frequent emptying.

The Enema.—An enema is best administered by means of the syphon or fountain syringe. The patient should lie upon the back or side. Warm water should be used when the object is to soften hard, fecal masses; a small, cool enema when the object is to stimulate action in the lower bowel; and a large, hot enema when it is desired to relieve pelvic inflammation. Cold enemata are useful in fevers.

Fomentations.—Fold a soft flannel twice, so as to make four thicknesses. Dip in very hot water, lifting out by the corner and placing in the middle of a towel. Roll up quickly lengthwise of the towel, and wring nearly as dry as possible by twisting the ends of the towel. In this way the fomentation can be wrung out much hotter than with the hands. Of course it will be too hot to apply to the bare flesh; but do not waste heat by

letting it cool. Protect the skin by one or more thicknesses of flannel and apply at once, covering with another dry flannel. Renew when the heat begins to moderate very perceptibly, and continue as long as necessary.

Compresses.—The compress is a wet cloth or bandage applied to a part. The object may be to cool the part under treatment, or to retain the heat. The compress may be used with equal success for either purpose. When the part is to be cooled, a compress composed of several folds should be wet in cool, cold, or iced water, as required, and placed upon the part after being wrung so it will not drip. It should be changed as often as *every five minutes*. This is often neglected, to the injury of the patient. A very cold compress may be prepared by placing snow or pounded ice between the folds of the compress. This will not need renewal so frequently; but its effects must be carefully watched, as injury may be done by neglect.

The Oil Bath, or Inunction.—Inunction was greatly practiced by the ancients in connection with the Roman and Turkish baths. It consists in rubbing the skin very thoroughly with some unctuous substance. Olive-oil may be employed, but cosmoline and vaseline, refined products of coal-oil, are much preferable. Olive-oil cannot be obtained pure except at almost fabulous prices. That sold in the drug-stores as olive-oil is usually cotton-seed oil and mixtures of lard with various other vegetable oils. We have found pure refined cocoanut-oil to be the best of all oils for this purpose.

A warm full or sponge bath should first be administered. Then dry the patient as usual, and apply the unguent, taking care to rub it in thoroughly. Simply greasing the surface is not the object sought. The skin and flesh should be worked, rubbed, and kneaded until the oil nearly disappears from the surface. The skin should then be wiped clean with a soft cloth.

Heat and Cold to Spine.—Alternate fomentations and cold compresses may be applied, or alternate hot and cold sponging may be preferred, the alternations being made every half minute, or once in one to three minutes. Water as hot and as cold as can be borne should be used. In some cases it is necessary to employ ice in order to obtain the desired effect.

Electricity.—The most suitable form of electricity for use at home is that known as the faradic current. The most generally useful mode of application is that termed general faradization. In making this application, place the patient on an ordinary stool with the face toward the battery and the feet on a sheet of copper to which the conducting cord connected with the negative pole is attached. Patients who through paralysis or for any other reason are unable to sit up, may receive the treatment while lying in a bed or on a lounge, the sheet of copper being supported against the feet by means of a pillow or cushion. Except in cases where there is a special indication for the application of electricity to the lower limbs, the negative pole may be applied to the lower end of the spine instead of the feet. This plan is a better one with infants, with whom difficulty may be experienced in keeping the feet upon a metallic plate. The right hand of the operator should be placed upon the forehead of the patient, while with the left he touches the sponge of the positive pole of the battery. The sponge should not be grasped at first, but simply touched with the tip of one finger. Then, if the patient does not feel the current as desired, it may be taken in the hand and pressed with sufficient firmness to obtain as much strength of current as is needed.

After applying the current to the head for a minute or two, the positive sponge should be passed slowly down the spine a few times, then over the back, chest, abdomen, arms, and legs, passing over every part of the body.

In applications to the spine, the negative pole is placed at the lower end, and the positive is passed slowly down the spine twenty-five or thirty times. In applications to the chest, stomach, womb, or other internal organs, the positive pole is held upon the spine opposite the organ and the negative placed over it. The time required is usually five to fifteen minutes. In cases of vomiting during pregnancy, this means is sometimes invaluable, and the current may be employed several hours at a time.

Galvanism is especially useful in cases of "nerve-tire," and for relief of neuralgia of the ovaries, spinal irritation, and deficient development of the womb and ovaries.

For quite complete directions for the use of electricity, the reader is respectfully referred to the "Home Hand-Book," a work by the author.

Hot Air or Vapor Bath.—An effective vapor bath may be improvised in a number of ways. A very convenient method is the following: Place the patient in an old chair (a new chair would be damaged) over the seat of which a towel has been spread. Place under the chair a tin pan or basin with about a quarter of an inch of water in the bottom. Place in the center of the pan a sauce dish containing three or four tablespoonfuls of alcohol. Wrap a woolen blanket about the patient, covering him completely, with the exception of the head, and making it tight around the neck. Outside of the blanket place one or two comfortables so as to retain the heat. Then raise the coverings back of the chair and light the alcohol. The heat generated will be sufficient to give the patient an excellent hot-air bath.

For a vapor bath the arrangements are the same, excepting that the pan and dish containing the alcohol are replaced by a pail of hot water, into which hot bricks, to which wires have been attached, are one by one carefully lowered into the water, thus generating the desired quantity of steam. Care should be taken not to *drop* the brick into the water, as the amount of steam thus generated might be sufficient to burn the patient.

Many variations of these baths may be devised. After the vapor bath, the patient should be quickly sponged all over with cold water, or, standing up, should have a pailful of water, 75° to 85°, poured over him. A shower bath is preferable when available.

The Bladder Douche.—The administration of the bladder douche is so essential, and is also so simple that we shall describe the operation, although it is one usually left to the physician. We think it important that patients requiring the use of this measure of treatment should understand how to administer it properly themselves, so as not to be dependent upon the daily visits of a physician. An intelligent nurse can be instructed to give it properly without difficulty.

The patient should lie upon the back, the fountain or syphon syringe having been made ready for use (no others are suitable for the purpose). The solution should also be ready and in the syringe, the temperature being from 105° to 110° F. The tem-

perature must be such as will be most agreeable at first, being gradually increased. We have found that a temperature of 120° will be tolerated well after a few weeks. After introducing the catheter, empty the bladder and then connect the syringe tube, first being careful to see that all air has been excluded and allowing the fluid to run until the stream is of the same temperature as the contents of the syringe. Let the bladder fill very slowly, by regulating the height of the syringe. In case the bladder has become contracted, the reservoir must be raised higher from day to day, and the patient must be instructed to retain the contents of the bladder as long as possible.

Various medicaments should be added to the water used in the douche, according to the conditions present. An irritable bladder requires soothing remedies. If there is much mucus in the urine, astringents and alternatives are required. If the urine is acid, alkaline lotions must be used. The injections should never be strong enough to give pain, and should be introduced with great care. For ordinary cleansing, use a solution of common salt in the proportion of a dram of salt to the pint of water.

POSTURAL TREATMENT AND MASSAGE.

These two measures of treatment are invaluable as means of effecting a permanent cure of the numerous maladies which afflict womankind. By postural treatment we designate certain forms of exercise in which the body is placed in special positions or attitudes. We shall not attempt to describe all of the various modifications of special exercises which can be taken with benefit, but only such as we deem most important. The special object of these exercises is to strengthen the abdominal muscles and natural supports of the womb and to facilitate the restoration of the displaced womb or ovaries to their proper position.

To Strengthen the Muscles of the Trunk.—1. The patient should lie upon the floor or a hard couch or mattress. The feet should be placed together and the arms extended by the side. Now raise one arm to a vertical position. The motion should be made slowly, a deep inspiration being made at the same time, the arm returning to its position by the side as the lungs are

empty. After repeating the motion half a dozen times with the other arm. Now raise both arms to the vertical position in the same way, repeating several times. Plate M. Returning to the first arm, raise it to a vertical position and beyond until it lies upon a level with the body, the head in the axis of the body. Repeat half a dozen times with the other arm, then raise both arms to the same way. This simple movement calls into action a number of the muscles of the trunk, and especially the abdomen.

2. Make similar movements with each leg, then repeat six times as with the arms, then raising the arms as in Fig. 2. This is a much more vigorous movement.

3. The patient should sit upon a stool of such height as to place the arms as shown in Fig. 3, and then alter the position of the body from side to side as far as possible. This exercises the muscles of the trunk.

4. Let the patient place herself upon a smooth, hard surface. A soft, springy bed is not suitable. A hard sofa will answer very well. The legs should be drawn up as close to the body as possible. Now lift the lower part of the body so that the portion of the trunk will not touch the surface, but be wholly supported by the feet and shoulders. This position should be held steadily in this position for a minute or two. If possible without any considerable fatigue to the patient, the body should be lowered to its original position. After a few minutes' rest, the same exercise should be repeated. This exercise may be continued twenty or thirty minutes, according to the patient's strength. By elevation of the hips in this position, the contents of the lower portion of the bowels, by the force of gravitation, be drawn from the lower position into their original place. The effect of this exercise is greatly increased by the aid of an attendant, who, while the hips are partially with one hand, should with the other manipulate the bowels in such a manner as to draw the contents of the pelvis toward the stomach.

Prompt relief very often follows the em-

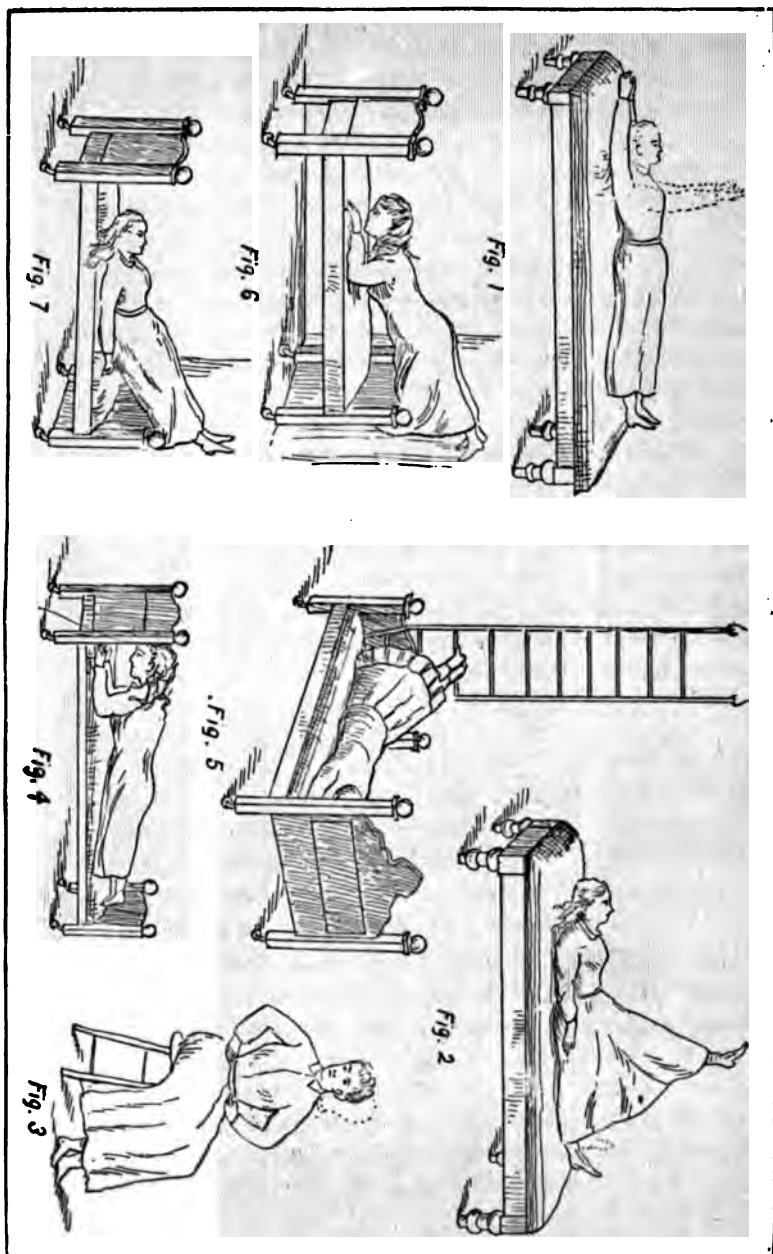


PLATE M.

measure, even the very first time it is applied ; and if it is continued daily, and two or three times a day when the patient is sufficiently strong, very excellent results may be looked for.

This movement not only strengthens the muscles of the trunk, but aids replacement.

5. Another movement which is very effective for the same purpose, consists in supporting the body upon the toes and elbows with the face downward, the hips being raised so as to make the body horizontal, as shown in Fig. 4.

6. Still more thorough exercises may be taken by the aid of an assistant. One of the best of this sort consists in elevation of the lower extremities by means of an assistant, while the patient lies upon the face, supporting the body by the chest and keeping the limbs rigid while the feet are elevated by the assistant. While the hips are elevated in movements of this sort, the intestines fall forward in the abdominal cavity, dragging the prolapsed womb after them.

7. Practically the same result may be accomplished by climbing a ladder by means of the feet, as shown in Fig. 5. The ladder may be constructed by means of two hanging ropes attached to rings in the ceiling and connected by round wooden bars, or by straps suspended and connected in a similar manner. In the absence of a ladder the patient may climb up the wall beside the bed in a similar fashion. Fig. 6.

Another mode of accomplishing the same result, in part at least, is resting the head and chest or shoulders upon the floor while the thighs are supported upon the bed. These exercises are, of course, especially useful in prolapsus and retroversion.

8. A reverse form of exercise may be obtained by climbing the ladder or the wall with the face upward, as shown in Fig. 7. This is especially applicable to cases of ante flexion or anteversion.

To Restore Displaced Organs to Position.—The discovery of the advantages to be derived from the "knee-chest" position was a great advance in the treatment of the diseases of women, especially retroversion and prolapsus. The exact posture to be assumed and the advantages to be gained by it are clearly shown by the three figures on Plate XII. By the aid of gravity, a woman by this means can do more for herself than the best phy-

sician could do with all his appliances a quarter of a century ago. By assuming the knee-chest position, the full weight of the abdominal organs drags upon the pelvic organs, to lift them into place; but so long as no air is admitted into the vagina, the effect is small, as will be seen by reference to Fig. 2, Plate XII, which shows the womb retroverted. The moment air is admitted to the vagina, however, the advantage of the position appears. The vagina expands to the pelvic walls, the uterus tips forward, and the intestines fall forward and downward, completely emptying the pelvis. Not only is the pelvis emptied of its visceral contents, but the blood-vessels are also drained, two most important objects being thus accomplished at the same time.

In order to allow air to enter the vagina, a glass tube should be introduced before the knee-chest position is assumed. An ordinary enema tube answers the purpose perfectly.

The effect of the treatment may be greatly augmented by deep and regular breathing while in the knee-chest position. The vigorous inspiratory effort will not only draw the pelvic organs upward, but will empty the blood-vessels.

We know of no one measure of treatment so valuable in the treatment of prolapsus and retroversion as this.

Massage.—"This is a method of treatment of great value in all cases of anemia, general debility, and muscular or nervous weakness. Its proper employment is essential to the successful treatment of most cases of chronic uterine or ovarian disease. The treatment consists in a systematic kneading and manipulation of the whole body, the exact details of which are too lengthy for description here, and we shall have to refer our readers to our larger work * in which will be found a complete description of the various passive exercises employed in massage and Swedish Movements."

Massage of the Bowels.—This is one of the most efficient means of relieving chronic constipation of the bowels. The bowels should be kneaded very much after the fashion of kneading dough, care being observed to make the movements tend in the direction of the large intestine, beginning at the lower right side

* "The Home Hand-Book of Domestic Hygiene and Rational Medicine," Modern Medicine Pub. Co., Battle Creek, Mich.

of the abdomen and extending upward to the ribs, across to the opposite side, thence down to a corresponding point upon the left side. Gentle percussion of the bowels, increased as the patient is able to bear it, is a good measure. Percussions may also be applied to the back with benefit. The exercise should be continued for fifteen to thirty minutes, and may be employed with advantage at least twice a day, preferably two hours after breakfast and after retiring at night.

Massage of the Womb.—This new application of massage has won many brilliant successes in the hands of skillful operators. There are three modifications of the treatment; external, internal, and the two combined. Only external massage can be properly employed by untrained persons. The operation consists in grasping the uterus between the two hands, first compressing it and then applying a rolling motion. This should be alternated every minute or two with an upward movement applied with both hands in such a manner as to lift the womb from the pelvis. To facilitate the treatment, the patient should lie with the hips elevated upon a pillow or cushion.

The movements should be applied with care and great gentleness at first, and no violence should ever be employed. The treatment may be continued from ten minutes to half an hour twice a day. The patient should rest in a horizontal position for half an hour after the conclusion of the treatment.

MISCELLANEOUS REMEDIES AND PRESCRIPTIONS,

The following prescriptions for medicated enemata will be found very useful for the purposes suggested, as we have abundantly proven by frequent use:—

Soap and Water Enema.—Make a pretty strong solution of castile soap in warm, soft water. Use one pint to two quarts as may be necessary to secure a movement of the bowels. Useful in obstinate constipation. In very obstinate cases, common soap may be used instead of castile soap, being more powerful.

Camphor Water Enema.—To half a glassful of water, add ten to thirty drops of spirits of camphor, and inject into the rec-

tum half an hour after breakfast,—a most valuable remedy when constipation is the result of want of sensibility of the lower portion of the intestines. In severe cases the same quantity of camphor-water should be injected into the rectum in the evening and retained during the night.

Glycerine Enema.—One to two tablespoonfuls of glycerine should be used, with three or four times as much water. It is of service in the same class of cases as the preceding.

Linseed Tea Enema.—Boil a handful of linseed in a gallon of water. Use as an ordinary enema. Useful in cases of hemorrhoids and fissure of the rectum.

Quassia Enema.—Prepare in the same way as the above. After washing out the bowels thoroughly, inject slowly as much as the bowels will hold. This is the very best remedy for "seat" or "pin" worms.

Starch Enema.—Half a teaspoonful of corn starch; two tablespoonfuls of water; stir until smooth; add half a pint of boiling water. Use two to four tablespoonfuls in administering medicine by enema.

Lotions for Use in Cancer of the Breast.—The following remedies are very useful for the purposes named, in the treatment of cancer of the breast:—

℞.	Ex. Bella,	dr. 1.	
	Ex. Stramon.,	dr. 1.	
	Vaseline,	oz. 1.	M.

To be used as an ointment over the affected breast before ulceration has begun. Excellent to relieve pain arising from the rapid growth of the cancer.

℞.	Sugar of lead,	gr. 15.	
	Aque,	oz. 1.	M.

Apply three or four times a day to the ulcerated surface to relieve pain.

℞.	Chloral hydrate,	gr. 5.	
	Vaseline,	oz. 1.	M.

Apply to the ulcerated surface when foul smelling. Will correct the fetor and allay pain.

℞.	Iodoform,	dr. 1.	
	Acacia (pulv.),	oz. 1.	M.

Sprinkle over foul discharging surface for same purpose as preceding.

℞.	Permanganate of potash,	oz. 1.	
	Aque,	pt. $\frac{1}{4}$	M.

Add two tablespoonfuls to a pint of water and use by injections daily in cases of cancer of the womb with foul smelling discharge. Solution will stain linen and skin.

℞.	Ac. Carbolic,	f. oz. 1.	
	Glycerine,	f. oz. 4.	
	Aqua,	f. oz. 10.	M.

Add two tablespoonfuls to a pint of water, mix well, and inject for same purposes as above. Does not stain.

℞.	Tannic Acid,	oa. 1.	
	Aqua,	f. oz. 4.	M.

Inject to relieve hemorrhage in cancer of the womb.

For Sore Nipples.—The following are a few of the most efficient remedies for use in cases of sore or cracked nipples:—

℞.	Alum or Borax,	gr. 15.	
	Whisky,	f. oz. 1.	M.

Apply to surface twice a day when tender but not raw, for the purpose of hardening.

℞.	Zinc, Sulphas,	gr. 10.	
	Aqua,	f. oz. 2.	M.

Apply daily when slightly abraded or cracked.

℞.	Tannic Acid,	gr. 15.	
	Glycerine,	f. oz. 1.	M.

Apply after cleansing part, twice a day.

℞.	Tannic Acid,	dr. 3.	
	Glycerine,	f. dr. 1.	
	Aqua,	f. dr. 2.	M.

Rub on nipple twice a day, during last month of pregnancy, to harden it and prepare for nursing.

Add to above preparation enough vaseline to make a thick ointment and build up around the nipple when cracked or sore.

Vaginal Lotions.—The following are a few of the most serviceable prescriptions for use by injection into the vagina in the treatment of vaginal and uterine affections:—

℞.	Tannic Acid,	oa. 2.	
	Glycerine,	f. oz. 1.	M.

Add a teaspoonful to a pint of cold water, and use daily after hot douche in mild cases of leucorrhœa.

℞.	Boracic Acid,	oa. 1.	
	Aqua,	pts. 2.	M.

Inject one-half pint after hot douche daily, in leucorrhœa, particularly when there is an acid or irritating discharge.

℞.	Alum,	dr. 2.	
	Ac. Tannic,	dr. 1.	
	Aqua,	pt. 1.	M.

Use after hot douche daily, in leucorrhœa or chronic congestion of the womb.

R.	Alum,	dr. 1.	
	Decoction of oak bark,	pt. 1.	M.

Use daily after hot vaginal douche in leucorrhœa.

R.	Hops,	oz. 1.	
	Hot water,	pt. 1.	M.

Let stand over night. Inject after hot douche in cases of leucorrhœa in which there is much irritation.

VINEGAR is useful in cases in which there is abrasion, or so-called ulceration of the neck of the womb. Only pure cider vinegar should be used, and it should at first be diluted with an equal quantity of water. Should not be used when the vagina is sensitive from an acrid leucorrhœal discharge.

Vaginal Pledgets.—The cotton tampon or pledget is one of the most useful means of applying medicaments to the womb and vagina. Their object is usually to allay irritation, to disinfect the local discharge, to remove congestion by draining the blood-vessels, to contract relaxed vaginal walls, and to act as a mechanical support for the womb and other parts. The best raw cotton should be selected. Make the cotton into the form of a ball adapted to the size of the vagina, and tie about the center a string of sufficient length to facilitate removal. If the sole object of the application is the introduction of a medicament, or if the parts are very sensitive, the pledget may be quite soft. If support is also required, the ball should be more compact. In many cases a number of small pledgets can be introduced with much greater ease than a single large one. Three or four may be attached to the same string, two or three inches apart, or each may have a separate string. In the latter case, knots should be tied at the free extremity of the several cords, so as to indicate the order in which they are introduced. Care should be taken to saturate the pledgets sufficiently with the preparation used. When two or more pledgets are used, it is not usually necessary to saturate the last one, which should be smeared with vaseline to facilitate removal.

The pledget should be introduced while the patient is in a horizontal position after taking the hot vaginal douche. In cases of retroversion, or prolapsus, the patient should take the knee-chest position after introducing the pledget, and after admitting air to the vagina should crowd the pledget up behind or against the neck of the womb as far as possible. The pledget should be introduced daily, and preferably in the morning, being retained until the patient takes the horizontal position preparatory to the douche on the following day, or just before retiring if two daily douches are taken. In removing it, while one hand draws upon the attached cord, the fore-finger of the other hand should be in-

roduced into the vagina to loosen the pledget and to prevent its withdrawal from dragging the womb down, which is likely to happen if this precaution is not observed.

We should remark just here that the effect of many of the applications made is to produce a profuse watery discharge. This should occasion no alarm, as it is by drawing away the surplus fluid that the congestion is relieved. Care must also be used with some to prevent soiling of the clothing. This is especially true of preparations containing tannin, when there is iron present in the water used for the hot doucha.

We frequently supply patients who may need to continue the use of the pledgets after returning to their homes, with a convenient little instrument by means of which the pledgets can be placed much more easily and efficiently than by the finger.

The following are a few of the prescriptions which we have found most useful :—

Rx.	Tannic Acid,	oz. 1.	
	Glycerine,	℥. oz. 4.	M.

Dissolve, use daily, or three times a week, alternating with pure glycerine or vaseline. Useful in cases of subinvolution of the vagina and womb, enlargement of the womb, and profuse leucorrhœal discharge. It will be necessary to dilute the preparation with an equal quantity of glycerine in many cases at first.

Rx.	Ac. Carbolic,	dr. 1.	
	Glycerine,	℥. oz. 12.	M.
	Mix thoroughly.		

This is useful as an alternate for the preceding, and in all cases in which glycerine is indicated. It may be used instead of the preceding when the vagina is tender, alternating with the vaseline pledget until the parts will bear the tannin preparation. It is a very healing preparation.

Rx.	Iodoform,	dr. 2.	
	Balsam Peru,	℥. dr. 1.	
	Glycerine,	℥. oz. 1.	M.

Very useful in cases of ulceration or abrasion of the neck of the womb, and when there is an irritating or offensive vaginal discharge.

Rx.	Iodoform,	dr. 1.	
	Tannic Acid,	dr. 2.	
	Glycerine,	℥. oz. 1½.	M.

Of special service in profuse, excoriating leucorrhœa. Apply daily.

Rx.	Ex. Eucalyptus,	℥. oz. 2.	
	Glycerine,	℥. oz. 2.	M.
	Apply daily.		

This new remedy we have found exceedingly valuable as a means of relieving the harassing neuralgic pains so common in cases of chronic

disease of the womb and ovaries. It is also useful in cases in which there is an offensive leucorrhoeal or menstrual discharge.

GLYCERINE is probably the most useful of all single remedies for use in cases of leucorrhoea, catarrh of the womb, congestion, inflammation, and enlargement of the organ. It rarely produces any uneasiness, even when there is much local sensitiveness. Its good effects are produced by its affinity for water, to obtain which it drains the blood-vessels of the surfaces with which it comes in contact. When any irritation arises from its constant use, it may be alternated with vaseline.

VASELINE, used alone or combined with three to five drops of carbolic acid to the ounce, is a very excellent application in cases in which there is great irritability of the vagina. It should always be used to lubricate the cotton pledget when used without other medicaments as a means of supporting the uterus, and should be employed to lubricate the parts before introducing medicated pledgets.

ALUM is very useful as a remedy for leucorrhoea, and for use in uterine hemorrhage from any cause. It may be used in either of the following ways:—

Prepare a cotton pledget in the usual manner, placing in its center about one-fourth of a small teaspoonful of powdered alum.

In cases of severe hemorrhage, or very profuse menstruation, make a small muslin bag, fill with powdered alum, and introduce into the vagina with a string attached, pressing it well up against the cervix.

VINEGAR is also valuable for use with the pledget in cases of severe hemorrhage. In puerperal hemorrhage a large cotton ball should be saturated with vinegar and crowded up into the mouth of the womb. The effect in staying the hemorrhage is almost instantaneous in most cases.

A **LEMON**, carefully peeled, all the rind being removed so as to bring the juicy surface in contact with the bleeding vessels, is a valuable means for stopping the violent hemorrhage which sometimes follows labor. It should be introduced within the mouth of the womb.

Vaginal Suppositories.—These are medicated cones composed of oleaginous material holding in solution or imbedded in the medicament. The following are a few of the most valuable for use in cases in which there is much local pain and irritability:—

℞.	Iodoform,	gr. 20.	
	Sugar,	gr. 4.	
	White Wax,	dr. 1.	
	Cacao Butter,	oz. ½.	M.

Melt and pour into four cones of paper to cool. Introduce one into the vagina at night, and two or three times a day if necessary in cases of severe pain in the womb which is not relieved by fomentations over the abdomen, the hot douche, or the hot enema.

℞.	Ex. Bella.,	gr. 4.	
	Sugar,	gr. 4.	
	White Wax,	dr. 1.	
	Cacao Butter,	dr. 4.	M.

Melt and cool in four paper cones. Use as directed for the preceding.

℞.	Ex. Bella.,	gr. 4.	
	Tannic Acid,	gr. 12.	
	Sugar,	gr. 4.	
	White wax,	dr. 1.	
	Cacao Butter,	dr. 4.	M.

Melt and cool in four paper cones. Useful in cases in which there is pain accompanied by leucorrhœa. Also excellent for use by the rectum in cases of hemorrhoids. Use daily.

℞.	Ex. Bella.,	gr. 4.	
	Iodoform,	gr. 20.	
	White Wax,	dr. 1.	
	Cacao Butter,	dr. 4.	M.

Melt and cool in four paper cones. This is one of the most useful prescriptions for the relief of pain.

For Bladder Douche.—The following are a few of the prescriptions which we have found of greatest service in the treatment of cases requiring the use of the bladder douche:—

℞.	Common salt,	dr. 1.	
	Aque,	pt. 1.	M.

Excellent for simply cleansing the bladder, or distending it when contracted.

℞.	Potass. Chloras,	dr. ½.	
	Aque,	pt. 1.	

Useful for the same purpose as the preceding.

℞.	Cider Vinegar,	℥. dr. 4.	
	Aque,	pt. 1.	M.

Use when urine is alkaline, having an ammoniacal odor.

℞.	Bi-carbonate of soda,	gr. 16.	
	Aque,	pt. 1.	M.

Use when urine is acid, or shows a brick-dust deposit.

℞.	Tannic Acid,	gr. 16.	
	Aque,	pt. 1.	M.

Use in cases of chronic catarrh of the bladder.

℞.	Boracic Acid,	dr. 1.	
	Aque,	pt. 1.	M.

Useful as a cleansing injection, and in cases of acute catarrh of the bladder.

℞.	Ex. Hydrastis (aqueous),	℥. dr. 2.	
	Aque,	pt. 1.	M.

Useful in chronic catarrh of the bladder. The strength may be increased by degrees.

For Constipation.—

℞.	Brown sugar,	Tablespoonful 1.
	Water,	pt. 1.

Use when there is want of desire for movement of bowels.

℞.	Common salt,	dr. 1.
	Aquæ,	pt. 1.

Use same as preceding.

For Catarrh.—The following are a few of the preparations which we have found efficacious in the treatment of pharyngeal catarrh.

℞.	Borax,	dr. 1.
	Bicarbonate of Soda,	dr. 1.
	Glycerine,	f. oz. $\frac{1}{2}$.
	Aquæ,	pt. 1.

An excellent cleansing solution, to be used in cases of pharyngeal catarrh, as a preparation for the application of other remedies. Use with atomizer.

℞.	Chlorate of Potash,	dr. 1.
	Aquæ,	pt. 1.

Use with atomizer in cases of catarrh with an irritating discharge.

℞.	Tannin,	dr. $\frac{1}{2}$.
	Aquæ,	f. oz. 10.

Use with atomizer after cleansing solution in cases of profuse discharge.

℞.	Oil Eucalyptus	dr. $\frac{1}{2}$.
	Oil Petrolina,	f. oz. 3.

Use with atomizer in cases of dry catarrh.

℞.	Potass. Permanganate,	dr. $\frac{1}{2}$.
	Aquæ,	f. oz. 12.

Use with spray after cleansing solution in cases of catarrh with offensive breath.

℞.	Boracic Acid,	dr. 1.
	Powdered Gum Acacia,	dr. 2.

Use as a snuff in cases of catarrh with offensive discharge.

For Mouth and Throat.—The following preparations are tested by experience, and known to be of real value in the treatment of the conditions for which they are recommended.

℞.	Borax,	dr. $\frac{1}{2}$.
	Glycerine,	f. oz. 1.

Apply with camel's-hair brush in thrush or aphthæ.

℞.	Chlorate of Potash,	dr. 1.	
	Aqua,	f. oz. 4.	M.

Use as gargle in sore mouth or sore throat.

℞.	Acid Carbolic,	dr. $\frac{1}{8}$.	
	Glycerine,	f. oz. 1.	
	Aqua,	f. oz. 8.	M.

Apply to throat in severe diphtheria with fetid breath, by means of atomizer or swab.

℞.	Chlorinated Soda Solution,	oz. $\frac{1}{8}$.	
	Aqua,	f. oz. 8.	M.

Use as gargle or with atomizer in diphtheria when the breath is foul.

℞.	Acid Tannic,	gr. 10.	
	Glycerine,	f. oz. 1.	M.

Apply to back of throat with brush in cases of chronic sore throat.

℞.	Chloride of Sodium (common salt),	dr. $\frac{1}{8}$.	
	Aqua,	f. oz. 2.	M.

Inhale spray with atomizer three times a day for acute hoarseness from a cold.

℞.	Acid Tannic,	gr. 8.	
	Aqua,	f. oz. 1.	M.

Inhale spray daily for chronic sore throat and hoarseness.

℞.	Alum,	gr. 5.	
	Aqua,	f. oz. 1.	M.

Use for same purpose as the preceding.

Lime-Water.—

℞.	Best White Quicklime,	lb. 1.	
	Aqua,	gal. 1.	M.

Let stand in earthen jar 24 hours, shaking occasionally. When settled clear, turn off the clear solution, and keep in a well-stoppered bottle. For use in treatment of infantile dyspepsia and diarrhea, and in diphtheria and croup.

Disinfectant Lotions.—

℞.	Copperas,	lb. 2.	
	Water,	gal. 1.	M.

Disinfectant lotion for use with scarlet fever and diphtheria patients, as directed.

℞.	Sulphate of Zinc,	lb. $\frac{1}{4}$.	
	Aqua,	gal. 1.	M.

Disinfectant lotion for cleansing cloths used in connection with diphtheria and scarlet fever patients.

℞.	Potassium Permanganate,	oz. 2.	
	Aqua,	gal. 1.	M.

Keep in jug or glass bottle. A teaspoonful should be placed in the vessel which receives the discharges of a diphtheritic or scarlet fever patient.

Miscellaneous.—The following miscellaneous prescriptions include, among others, those which have been referred to in the preceding pages of this work :—

R.	Iodoform,	dr. $\frac{1}{4}$.	
	Vaseline,	dr. $4\frac{1}{4}$.	M.

Useful in cases of painful connection, or vaginismus. The ointment should be applied on a little plug of charpie, which should be gradually increased in size from day to day until the painful contraction is overcome. If the odor is very objectionable, a little Balsam of Peru may be added.

R.	Ex. Bella,	dr. 2.	
	Vaseline,	oz. 1.	M.

Apply on charpie as directed for the preceding.

R.	Borax,	dr. 1.	
	Aqua,	oz. 4.	M.

Apply to the vulva when irritable from inflammation, using lint or soft linen cloths for the purpose.

R.	Acid Boracic,	dr. 1.	
	Aqua,	oz. 4.	M.

Apply same as preceding, and for same purpose.

R.	Ac. Carbolic,	f. dr. 1.	
	Glycerine,	f. oz. 1.	
	Aqua,	f. oz. 15.	M.

Apply with lint or soft cloths in cases of inflammation of the vulva.

Salt Glow.—The external application of salt by rubbing dry salt upon the skin vigorously is one of the best methods of stimulating the circulation and proper secretion of the skin.



Useful Dietetic Recipes.

BREADS.

Soft Biscuit, or Waffles.—Into one part of cold soft water stir two parts of graham or whole-wheat flour. Sift slowly in with one hand while stirring with the other, thus endeavoring to get in as much air as possible. If flour made from red wheat is used, a little less water will be required. The batter should be thick enough so that it will not settle flat. If it is too thin, the waffles will be flat and blistered; if too thick, they will be tough and heavy. Bake in cast-iron gem-pans, in a very hot oven, though the heat should not be sufficient to brown them in less than fifteen minutes, and they are better to bake twenty-five or thirty minutes; a longer time toughens the crust. They should be baked on the top first, to prevent the escape of air and steam. The pans should be heated very hot before dropping the batter in. To prevent sticking, smear with sweet-oil or fresh butter, and when thoroughly heated, carefully wipe away as much as possible of the oil.

Rice Waffles.—Take one part of boiled rice to three parts of water, and stir in sufficient graham or whole-wheat flour to make a batter a little thicker than when the flour is used alone. Bake the same as described above. Hominy and pearl barley may be used in the same manner.

Oatmeal Breakfast Cake.—Saturate oatmeal of medium fineness with water. Pour the batter into a shallow baking-dish, and shake down level. It should be wet enough so that when this is done a little water will stand on the top. Bake twenty minutes in a quick oven. It may also be baked in fifteen minutes on the top of the stove in a covered dish.

Graham Breakfast Rolls.—Make a stiff batter with cold water, work in as much flour as will knead well, and then knead for twenty minutes or half an hour. Make into rolls one-half inch to two inches in thickness, and bake in a hot oven on a grate or baking-pan dusted with flour, laying them a little distance apart. Excellent rolls may be made by kneading flour into cold graham, cornmeal, or oatmeal pudding.

Rusk.—Bread and crackers may be made into granola by first drying till brown, and then grinding in a coffee or hand mill.

This is a very serviceable article for thickening puddings, soups etc. May be eaten with hot milk.

Graham Crisps.—Mix graham flour and cold water into a very stiff dough. Knead, roll very thin, and bake quickly in a hot oven. Excellent food for dyspeptics.

Oatmeal Crisps.—Into oatmeal mush, or scalded oatmeal, knead a small quantity of graham flour. Roll very thin, prick with a fork, and bake upon a grate. Be careful that they do not burn. They are very tender and crisp when warm. If they are kept several days, place in the oven a few minutes just before they are to be eaten.

Graham and Oatmeal Crackers.—No. 1. Equal parts of graham flour and oatmeal made as directed for graham crackers are very tender.

No. 2. Work graham flour into oatmeal mush, forming a pretty stiff dough, and kneading well. Bake in a moderate oven until nicely brown.

Diabetic Bread.—Make a dough of equal parts of flour and water. (The new-process spring wheat flour, whole-wheat flour, or graham flour should be used.) Let the dough stand three hours, then place on a sieve under a stream of water until all the starch is washed out, which will be indicated by the water running off clear. Add enough coarse middlings so that the dough can be rolled into thin cakes and bake on tins. Salt and a little cream or butter may be added to make it more palatable, if desired.

GRUELS.

Beef Tea and Oatmeal.—Beat two tablespoonfuls of fine oatmeal with two spoonfuls of cold water until very smooth, then add a pint of hot beef tea. Boil together six or eight minutes, stirring constantly. Strain through a fine sieve.

Milk Gruel.—Into a pint of scalding milk stir two tablespoonfuls of fine oatmeal. Add a pint of boiling water, and boil until the meal is thoroughly cooked.

Oatmeal Gruel.—Stir two tablespoonfuls of coarse oatmeal into a quart of boiling water, and let it simmer at least two hours. Strain if preferred.

Rice Gruel.—Soak two tablespoonfuls of fine rice for half an hour in cold water. Pour off the water, add a pint of milk, and let it simmer until the rice is tender. Press through a sieve, and

then dilute with milk. Heat again for a few moments, pour off to cool, and flavor with a little salt or sugar.

Milk Porridge.—Place over the fire equal parts of milk and water. Just before it boils, add a small quantity (a tablespoonful to a pint of water) of graham flour or cornmeal, previously mixed with water, and boil three minutes.

Farina Gruel.—Place a quart of water in a saucepan, stir into it two tablespoonfuls of farina, let it boil until quite thick; add one pint of milk, a pinch of salt, and allow it to boil fifteen or twenty minutes longer. A little sugar may be added when cool, if desired.

Cream Gruel.—Put a pint and a half of water on the stove in a sauce-pan. Take one tablespoonful of flour and the same of cornmeal; mix this with cold water, and as soon as the water in the sauce-pan boils, stir it in slowly. Let it boil slowly about twenty minutes, stirring constantly; then add a little salt and a gill of sweet cream. Do not let it boil after putting in the cream, but turn into a bowl and cover tightly. Serve in a pretty cup and saucer.

JELLIES.

Chicken Jelly.—Take half a raw chicken, tie in a coarse cloth and pound till well mashed, bones and meat together. Place the mass in a covered dish with water sufficient to cover it well. Allow it to simmer slowly till the liquor is reduced about one-half and the meat is thoroughly cooked. Press through a fine sieve or cloth, and salt to taste. Place on the stove to simmer about five minutes. When cold, remove all particles of grease.

Lemon Jelly.—Put an ounce of gelatine in a large bowl with four tablespoonfuls of cold water to soften it. When soft, pour over it just three pints of boiling water, add two and a half cups of granulated sugar and the juice of three large lemons. Stir well, and drain through flannel or a very fine strainer. Pour into cups, and when cold put into the refrigerator until next day. This is very toothsome, but of no value as a food, and hence useful only in cases in which little nourishment is required.

Bread Jelly.—Pour boiling water over bread crumbs, place the mixture on the fire, and let it boil until it is perfectly smooth. Take it off, and after pouring off the water, flavor with something agreeable, as a little raspberry or currant jelly water. Pour into a mold until required for use.

Sago Jelly.—Simmer gently in a pint of water two tablespoonfuls of sago until it thickens, frequently stirring. A little sugar may be added if desired.

DRINKS.

Tapioca Milk.—Put an ounce of best tapioca into a pint and a quarter of fresh milk, and let it simmer gently for two hours and fifteen minutes, stirring frequently. Sweeten to the taste.

Bran Tea.—Take three tablespoonfuls of bran (not very coarse) and put it in a jug. Add to it one quart of boiling water, cover the jug, and allow the mixture to stand for half an hour. Strain and sweeten to the taste.

Rice Water.—Put three ounces of good rice into a quart of boiling water, and let it boil for an hour. Strain, sweeten, and flavor with a little lemon.

Apple and Toast Water.—Peel and quarter a pound of sub-acid apples, bake them, and put them in a jar; add half a pound of sugar, and a piece of bread toasted until it is dark brown; then pour a gallon of boiling water over them, and leave them to cool. When cold, press through a colander. A quarter of a pound of pearl barley added instead of the bread is very good. It should boil for an hour to cook the barley.

Tamarind Water.—Take two ounces of tamarinds and one-fourth of a pound of stoned raisins; boil them in a quart and a half of water for an hour; strain, and when cold it is ready for use.

Currant Water.—Take the juice of one pound of fresh currants and a few raspberries, one-half a pound of granulated sugar and a gallon of cold water; stir till mixed well.

Toast Water.—Brown a few crusts a nice, deep brown, but do not allow to blacken or burn. Break into small pieces, and put into a jar. Pour over the pieces a quart of boiling water; cover the jar and let the mixture remain until cold. When strained, it will be ready for use.

Lemonade.—Mix the slices and juice of two lemons with three spoonfuls of refined sugar, and add a pint of cold or iced water.

Hot Lemonade.—Take two thin slices and the juice of one lemon; mix with two teaspoonfuls of granulated sugar, and add one-half pint of boiling water.

Flaxseed Lemonade.—To four tablespoonfuls of whole flaxseed add a quart of boiling water, and let it steep three hours; then add the juice of two lemons; sweeten to the taste, and thin with cold water. Drink cold.

Barley Water.—Take half a teacupful of good pearl barley. First wash it thoroughly; then boil five or ten minutes in fresh water. Drain off this water and pour on two quarts of boiling water and boil down to one quart. Flavor if desired with a little lemon or sugar. Thin to required consistency with boiling water.

Gum Arable Water.—Put an ounce of choice gum arabic into a jar with two ounces of refined sugar and a pint of water. Place the jar in a sauce-pan of warm water and stir until dissolved. Add a little lemon to flavor. This is a good drink for consumptives.

Flaxseed Tea.—Take an ounce of whole flaxseed, half an ounce of crushed licorice root, an ounce of refined sugar, and four tablespoonfuls of lemon juice. Pour over these ingredients a quart of boiling water; let this stand near the fire for four hours, and then strain off the liquid. The flaxseed should not be crushed, as the mucilage is in the outer part of the kernel and if bruised the boiling water will extract the oil of the seed and render the decoction nauseous. The tea should be made fresh daily.

Bran or Wheat Coffee.—Mix bran and molasses to a stiff paste, spread on a tin and brown in the oven. Brown wheat in the same way. Be careful not to allow the heat to be sufficient to burn or scorch. Use as other coffee, for which it is a good and unstimulating substitute. Wheat coffee is sometimes sold at the stores in packages.

White of Egg and Milk.—The white of an egg beaten to a stiff froth and stirred very quickly into a glass of milk is a very nourishing food for persons whose digestion is weak, also for children who cannot digest milk alone. The white of egg has a tendency to prevent the formation of hard curds in the stomach.

LIQUID FOODS.

Chicken Broth.—Care should be taken to select a young fowl. Cut it up into small pieces, place it in a stew-pan and boil two hours. Turn off the broth, and after allowing it to cool, carefully skim off all particles of oil.

Beef Tea.—For every quart of tea desired, use one pound of fresh beef from which all fat, bones, and sinews have been carefully removed. Cut the beef into pieces a quarter of an inch square, or grind in a sausage-grinder, and soak over night in a small quantity of water (a pint will do). Take the beef out and let it simmer gently in a larger quantity of water for two or three hours, replacing from time to time the water lost by evaporation. Afterward pour together the boiling liquor and the cold liquid in which the beef was soaked.

ANOTHER METHOD.—Take a pound of fresh beef prepared as above, and mix with a pint of cold water. Let it stand an hour; then pour into a glass fruit-can, or large-mouthed stone jar, and place in a vessel of water; let it heat on the stove another hour, being careful not to allow it to boil. Strain through a fine cloth or filter before using.

Beef Juice.—Cut a pound of lean beef into small pieces, put into a bottle and cork it up; place the bottle in a dish containing a little cold water, and allow it to stand over the fire until it boils.

NUMBER 2.—Select a thick, tender piece of steak, free from fat. Hold over the coals for two or three minutes. Press the juice out with a lemon squeezer. Much more nourishing than beef tea or any variety of "beef extract."

Milk Diet.—There are occasionally cases in which great advantage is gained by the employment of an almost exclusive milk diet. Usually it is necessary to take the milk in moderate quantity, using a little other food at first. In the course of a week all other food may be withdrawn, and the quantity of milk may be gradually increased to four quarts a day. Milk is easily digested, and hence may be taken at more frequent intervals than other food.

Lime-Water and Milk.—In case in which milk sours or forms large curds in the stomach, lime-water may be added in such proportions as may be necessary. A tablespoonful of lime-water to a gobletful of milk is usually enough, but some cases require at least one-fourth as much lime-water as milk.

The lime-water may be made by slacking in a gallon jar a piece of lime of the size of the fist. The jar should be kept covered. After standing over night to settle well, the lime-water is ready to be used. It can be decanted or drawn off with a syphon.

Koumyss.—Dissolve one teaspoonful of yeast and two teaspoonfuls of sugar in three tablespoonfuls of warm (not hot)

water ; pour into a quart bottle and add milk sufficient to fill the same. Let it ferment from three to six hours, cork tightly, and tie the cork in. Put in a cool place not above 60°, and let it remain a week, when it will be ready for use. It is much better and smoother to ferment slowly.

PREPARATIONS FOR NUTRITIVE INJECTIONS.

Pancreas and Meat Solution.—Take fresh beef pancreas, carefully remove all fat, cut two ounces (about two heaping tablespoonfuls) into very small pieces. Take of finely scraped or ground beef, also free from fat and sinew, double the quantity of pancreas. Mix with two-thirds of a teacupful of warm (not hot) water. Stir until well broken up. Inject into the rectum through a large tube. About half should be injected at once, and the injection should be made slowly, so as to prevent its discharge before absorption has taken place. If necessary, a napkin should be held against the anus until the disposition of the bowels to move ceases.

Pancreas and Cream.—Chop very fine three ounces of fresh beef pancreas. Add two tablespoonfuls of warm water and a teacupful of sweet cream. Mix thoroughly in a small pail. Cover and place in a pan of water blood-warm. Keep at this temperature for from one-half to three-quarters of an hour, stirring frequently. At the end of this time strain through a coarse colander, rubbing through as much as possible of the pancreas, and inject into the rectum. If the patient will not retain all at first, use half the quantity, keeping the balance in a refrigerator until needed for use. Then warm to the proper temperature and inject as before.

Beef Tea and Egg.—Beat lightly one egg with four tablespoonfuls of strong beef tea. Inject as directed before. This is the most nourishing of any preparation which can be employed for this purpose, and as it is easily prepared should be resorted to whenever a patient cannot be nourished by the stomach.

MISCELLANEOUS.

White of Egg.—Stir the white of an egg into a tumblerful of cool water, or water warm as it can be without coagulating the egg. Give to infants suffering from extreme disorder of digestion and unable to take milk. This simple mixture has saved many an infant's life.

Eggs and Sugar.—Beat the yolks of four eggs with two tablespoonfuls of granulated sugar and the grated rind and juice of a small lemon or orange. Place in a dish in a kettle of boiling water, and cook, stirring constantly. Add to the whites of the eggs a teaspoonful of pulverized sugar and beat until stiff. When the yolks have begun to thicken, stir in the beaten mixture, and when thoroughly mixed put it away to cool.

Slip.—After slightly warming a pint of milk add a teaspoonful of liquid rennet and pour into saucers. In a few minutes, or when cool, the milk will be of the consistence of jelly. If the expected result is not obtained, add two teaspoonfuls of the rennet, as it is sometimes of deficient strength.

Frugolao.—This is a very palatable dish, prepared essentially the same as the preceding, except that an egg is added to the milk and it is to be eaten with fruit juice or jelly.

Rice Milk.—Boil a tablespoonful of rice an hour and a half in a pint of new milk ; rub through a fine sieve and sweeten to the taste. Boil a few minutes longer.

To Cook Rice.—Take two cups of rice and one and one-half pints of milk. Place in a covered dish and steam in a kettle of boiling water until it is cooked through ; pour into cups and let it stand until cold. Serve with cream.



Antiseptic Midwifery.

WITHIN the last thirty years it has been demonstrated beyond all reasonable doubt that a large share of the gravest complications of childbirth are due to germ infection.

The original source of germ infection may be the physician, the midwife, or the patient. It has not infrequently happened that case after case of puerperal fever has occurred in quick succession in the practice of a physician or a midwife, the infection being evidently carried from one patient to another by the medical attendant. It is known, however, that germs which are capable of producing inflammation, blood poisoning, and even death, are constantly found upon and about the external organs of generation ; they may even be found in the vagina. It is thus evident that infection may occur, even though the medical attendant be free from infectious germs.

The introduction of aseptic and antiseptic midwifery has resulted in the saving of many thousands of lives and of a vast deal of suffering, as not infrequently the inflammations which follow infection during childbirth give rise to pelvic disorders, which, if not immediately fatal, cripple a woman for life, generally rendering her sterile and a constant sufferer. Not infrequently it has fallen to the lot of the writer to be called upon to perform grave surgical operations for the removal of the Fallopian tubes and ovaries as the only means of relieving a patient who had suffered for half a score of years or more as the result of infection at childbirth.

It has been proven again and again in lying-in hospitals, as well as in private practice, that by sufficiently careful attention to the exclusion of germs it is possible to exclude fevers and inflammatory troubles following childbirth almost altogether ; so that in some cases many hundreds of consecutive confinements have been reported without a single death. This great

boon to womankind, however, involves the most scrupulous attention to the nicest details.

We have not here space in this short chapter to enter fully into all these, neither is it necessary, since their carrying out would require the services of a trained nurse. Nevertheless we wish to present a sufficient amount of information to place in the hands of the intelligent expectant mother such knowledge as will enable her to understand what sort of service she may reasonably demand of her obstetric physician and nurse, and to render her capable of intelligently co-operating with her medical attendants in the effort to secure the highest possible degree of safety at the critical period of parturition.

The practice of antiseptic midwifery is based upon the fact that inflammation is due to infection of the blood or tissues by germs. It is a well-known fact that certain precautions may be taken whereby perfect protection against these germs may be secured. These precautions depend upon two things,—cleanliness, and the application of substances capable of destroying germs, known as germicides, or antiseptics.

That the ordinary measures for securing cleanliness,—the application of soap, and the vaginal douche,—are not sufficient, is due to the fact that it is impossible by this means to render the patient absolutely clean. There will always be left some germs which cannot be removed, but which may be destroyed without removal by the employment of the proper measures.

These aseptic and antiseptic measures—in other words, cleanliness and germicides—must be applied to each of the following persons and things: 1. The nurse; 2. The patient; 3. The patient's clothing and bedding; 4. The physician; 5. The child. The substances which may be usefully employed, are—

1. **Boiled or Distilled Water.**—It is generally not possible to obtain distilled water in sufficient quantity, hence boiled water must be relied upon. Soft water is preferable to hard, for the reason that hard water is likely to destroy or neutralize the

chemical substances used for the antiseptic solution. Water must be boiled thirty minutes. After boiling, it should be put into perfectly clean, new jugs, which have been previously boiled and corked up to be ready for use when wanted. It is better that the water should be freshly boiled; it should not, at any rate, be more than two or three days old.

2. Soap.—With the soap use a new nail-brush, or, if a new nail-brush cannot be obtained, the old one should be thoroughly boiled or soaked for twenty-four hours in a strong antiseptic solution; a 1-2500 solution bichloride of mercury is preferable. Ordinary yellow soap is better than toilet soap, and quite as good as any soap called antiseptic soap, since the amount of antiseptic contained in such soaps is not sufficient to be of any special value.

For applying the soap in shampooing the patient a handful of excelsior which has been boiled and made into a nice wad for the purpose, or a freshly boiled "loofah," should be used in preference to an old shampoo brush.

3. Antiseptic Solutions.—Of these, the best is corrosive sublimate. For use as a vaginal douche, a solution consisting of one part of bichloride of mercury to 5000 parts of water should be used. For external application, a solution of double strength should be used. It should be remembered, however, that this solution is highly poisonous, and never should be placed in contact with the eyes or mouth of the patient, nor introduced into the rectum; and whenever it is used in the vagina, at the conclusion of the application a quantity of boiled water should be introduced to remove it. For a 1-5000 solution, use three grains to the quart. When ordinary boiled water is used, and not distilled water, it is well to add a teaspoonful of salt to each quart to secure prompt and permanent solution. When solutions of corrosive sublimate are made up in advance, in fact, under all circumstances, it is important to add some coloring matter so that the solution, which is colorless, shall not be mistaken for ordinary water, and thus be inadvertently swallowed, as death may easily result from such an error. The best material to

use for coloring is indigo carmine, which makes a deep blue color. Almost any of the blue aniline colors may be used. The red coloring matters should not be used, as they produce a solution having a resemblance to diluted wine or fruit juice. Aniline colors should only be used when the solution is to be employed at once, as they deteriorate the strength of the solution after standing.

Bichloride tablets have been prepared, but these are objectionable, as they resemble lozenges, and hence might be swallowed by mistake. A method devised by the writer which seems to be free from the objections of other methods for providing this very poisonous material in convenient and safe form, consists in preparing small masses of cotton lint, which are impregnated with a mixture of corrosive sublimate and chloride of sodium with the proper amount of coloring matter of such strength that each piece contains three grains of bichloride of mercury, or a sufficient amount to give to one quart of water the strength of a 1-5000 solution of bichloride of mercury. When a 1-2500 solution is required, it is only necessary to add two of these pieces. The material held in a dried form in the cotton is very quickly dissolved by contact with hot water, so that a solution is readily made. The cotton does not interfere with its use for any purpose, so can be left in the vessel or can be removed after a few moments. The ordinary solutions, and some of the powders and tablets prepared by druggists, contain tartaric acid. Such solutions should be avoided, for they are much more likely to produce poisonous effects than a solution made by the addition of chloride of sodium, or common salt, with the bichloride of mercury.

It must never be forgotten that bichloride of mercury is a very powerful poison, and its use in obstetrics is always accompanied by more or less danger, safety depending entirely upon the watchfulness and intelligence of the nurse. It is doubtful, on this account, whether it can ever be safely brought into general use except in hospitals or under circumstances in which it can be used under the immediate super-

vision of a physician or a trained nurse. In cases in which there is suspicion of disease of the kidneys, and in cases in which there have been extensive lacerations of the vagina or uterus, its use is accompanied by very great risk. It is also sometimes impossible to obtain this drug, hence it is important to know that there are other substances which can very well replace it. One of the very best of these is that which we shall next mention.

Sulphate of Copper.—This substance, commonly known as blue vitriol, is an excellent substitute for bichloride of mercury, or corrosive sublimate. It must, however, be used in much larger proportion. The quantity required for each quart is seventy-five grains or five drams per gallon. It may be used in the same way as corrosive sublimate, with the exception that it never can be used in connection with soap, with which it forms hard curds which adhere to the skin.

Pernanganate of Potash.—This is an excellent germicide, and has the great advantage that it is almost wholly free from poisonous properties. It should be used in the strength of eight grains to the quart. It is preferable to all other substances in cases in which a fetid discharge is present either before or after confinement.

Boric Acid.—This substance has very feeble germicidal properties, but is, nevertheless, of some value, since it prevents the development of germs to a very considerable extent, even though it does not destroy them. It must be used, however, in a very strong solution; one and one third ounces to the quart is the proper strength.

Preparations for an aseptic and antiseptic confinement ought to begin, if possible, at least a few days before the delivery. Everything about the lying-in room should be put in perfect order, and in the most sanitary condition possible.

Dusty carpets, rugs, and drapery should be removed. The dust should be removed with moist or damp cloths, not with a duster. The bed should be provided with a freshly renovated mattress, freshly washed bedclothing, and everything should

be scrupulously clean. Old feather beds and so forth be removed.

Next comes disinfection. The nurse or attendant, first of all, be sure that she has omitted nothing necessary to secure absolute personal cleanliness: bath, clean clothing, and a thorough cleansing are requisites. More particular instructions and details are important.

Disinfection of the Hands.—Clean the nails as possible with a wooden or quill toothpick or suitable and not sharp instrument. Scrub the forearms very thoroughly with hot soap suds, yellow washing soap and a thoroughly aseptic solution as indicated above. The water employed should be as pure as possible. Use plenty of soap, and give special attention to the nails, which should be cut short preparatory to

After the hands have been thoroughly cleansed, pour over them a small quantity of saturated borax and carbonate of ammonia, rubbing in thoroughly. Dip in boiled water for a second, then immerse in 1-2500 bichloride of mercury solution for two minutes. In the absence of bichloride of mercury, use a potassium permanganate solution, eight grains to the quart. If the hands must be covered with the potassium permanganate solution will color the skin, when the brown color is uniform, it is an indication that the disinfecting has been well done and that all fat has been removed from the skin. If the skin appears mottled, the disinfecting is not uniform, the scrubbing should be renewed and the operation repeated as before. After the delivery of the patient is cared for, the brown color of the skin should be removed by bathing the hands and arms with a solution of oxalic acid.

The physician before examining the patient should clean his hands in precisely the same manner, and should renew the cleansing of the hands whenever they come in contact with infected materials.

Disinfection of the Patient.—The patient should have a thorough soap and water bath a few hours before delivery. This can be administered in bed if necessary. Special attention should be given to the thorough shampooing of the vulva, or external parts, the region about the anus, the groins, the abdomen, and the upper thighs, especially the inside of the thighs. The cleansing of these parts is greatly facilitated by cutting off the hair. Hot, strong soapsuds should be used and a 1-2500 bichloride of mercury solution afterward, or, if corrosive sublimate is not employed, a sulphate of copper solution, five drams to the gallon (seventy-five grains to the quart), may be used. It must be remembered, however, that the parts must be rinsed several times with boiled water so as to remove every particle of soap before the copper solution is applied. It should be applied hot and the parts should be thoroughly scrubbed with it, pains being taken to reach every portion of the surface, leaving nothing secreted behind folds of skin or in the creases of the body.

Before shampooing, the bladder should be emptied, if necessary by the use of a catheter, and the bowels should also be thoroughly evacuated by means of an enema. The enema should be administered with the patient lying on the right side, turned as much as possible upon the face, and with the knees well drawn up. Two or three quarts of warm water should be introduced. It is well to introduce a pint or two of cold water at the end, to stimulate vigorous peristaltic movement, as many women are subject to constipation during pregnancy, and fecal accumulations are very likely to be present on this account, as well as from the pressure of the enlarged uterus. Be sure that the water employed for the enema is thoroughly evacuated, and the parts very carefully cleansed afterward.

After thoroughly cleansing the external parts, a disinfecting douche should be administered. This may consist of a bichloride of mercury solution, one part to five or ten thousand, or half a grain to three grains to a quart of water, or the copper solution may be used. The copper solution is

quite astringent, however, and should be employed only in cases in which it is known that the patient is suffering from disease of the kidneys or is especially susceptible to the influence of mercury. Before the disinfecting douche is administered, the vagina should be thoroughly washed out with a hot soap and water douche. Strong soap suds is made with three or four quarts of water, employing yellow soap. Pains must be taken to turn the douche tube in various directions, and, if necessary, to wash the vagina out by using one or two fingers, as there is very frequently a considerable amount of accumulated mucus hidden in the folds of the relaxed vagina, which will not be reached otherwise. Employ the antiseptic douche, which should consist of not less than two quarts of water, and should be at least 105° in temperature,—and in most cases 110° to 112° F.

The only precaution necessary in the use of the douche is to avoid the employment of too much force. A high degree of force might stimulate uterine contractions prematurely. This precaution is, of course, not necessary when the douche is used after the beginning of labor, and may even prove useful in stimulating the uterus to activity when the labor pains are not sufficiently vigorous. To avoid employing too much force, it is only necessary to take care to place the fountain (the syphon or fountain syringe should always be used in preference to any other, in these cases) at a distance not to exceed a foot and a half to two feet above the patient. To ensure safety in this respect, it is well to insist upon the use of a rubber conducting tube of not more than two feet in length. If the labor is prolonged, the antiseptic douche should be repeated at least once in four hours until delivery takes place.

Carbolic acid may be used in the proportion of four drams to the quart, or one part in sixty, as a substitute for a sulphate of copper or corrosive sublimate solution, when necessary to do so.

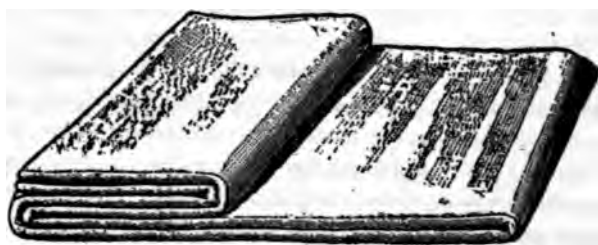
During labor the vulva should often be bathed in an antiseptic solution, employing either the bichloride or the copper

solution. After delivery, administer first a douche of hot boiled water to remove fragments, to stimulate uterine contraction, and then a solution of permanganate of potash or sulphate of copper. Both the copper and the permanganate of potash solutions are quite astringent, and hence are useful to some extent in correcting the relaxed condition of the vagina, which is always present after labor.

In administering the vaginal douche after labor, it is especially important to remember that there is danger of introducing the fluid into the uterus. This danger will be obviated, however, by taking the precaution to employ the fountain syringe only and to place the fountain not more than one foot above the patient, or just high enough to cause the water to flow through the tube. Administered in this way, the douche is devoid of danger, and is a great aid to comfort and cleanliness.

The permanganate of potash solution is especially useful in cases in which the patient has, before confinement, suffered from an irritating or offensive leucorrhœal discharge. In such cases the lochial discharge is likely to become irritating and offensive also, hence requiring the disinfectant and deodorant properties of the permanganate solution. In case the discharge is slightly bloody in appearance, the sulphate of copper solution is especially valuable on account of its astringent properties. This is especially true when the bloody discharge is bright red in color, indicating a bleeding surface at the neck of the womb, from laceration.

A large sheet of rubber placed under the patient is an important aid to antisepsis after delivery. Three or four dozen antiseptic cotton pads are also useful. These should be prepared in advance, placed in a cotton bag, and boiled for half an hour in a 1-2500 solution of bichloride of mercury or a 5-1000 solution (five drams to the gallon) of sulphate of copper. These pads should be about half a yard long and five inches wide when folded. They should be of different thicknesses. Those to be employed for the first days should be quite large and thick. After the first two or three days,

*Fig. 1.**Fig. 2.**Fig. 3.*

TARNIER'S OBSTETRIC CLOTH.

smaller ones may be used. They are placed under the patient in such a manner as to receive the discharges, being changed as often as soiled, and afterward burned.

Tarnier's obstetric cloth is a very convenient device, it is shown in the accompanying cuts. It consists of a large cloth folded in such a way as to give the appearance shown in Fig. 1. This is placed under the patient during labor. It raises the hips and facilitates examination, and thus is a decided aid to the physician in his examinations and in the delivery of the child. At the beginning of delivery the first fold is brought down, as shown in Fig. 2. After delivery, while the patient is being cleansed, the second fold is brought down, giving the pad the shape shown in Fig. 3. By this means the highest degree of cleanliness is secured in the most convenient manner possible. This device is very popular in France, but has not yet been very extensively introduced into this country.

A few words must be said respecting the antiseptic treatment of the nipples. If sore, the nipples should be treated twice daily with a hot 1-5000 solution of bichloride of mercury, or a saturated solution of boracic acid, and dusted with subnitrate of bismuth or zinc oxide.

Intestinal Antisepsis.—Still another measure of great importance in securing immunity from unfortunate complications during childbirth, is intestinal antisepsis. This requires careful attention to the patient's condition and regimen for at least a number of days prior to confinement. A matter of the first importance in intestinal antisepsis is the dietary. This will exclude all such articles as meat, cheese, fish, oysters, pastry, pickles, coarse vegetables, and everything of an unwholesome or indigestible nature. The only flesh food at all allowable is a small amount of the white flesh of fowl. It is best to omit even this for at least a few days prior to the confinement. The most suitable articles of food are fruits of all kinds, grains simply prepared, ripe fruit of all sorts, either fresh or simply cooked, grains of all kinds, prepared in a simple and wholesome manner, purées of pease, beans, and other legumes, vegetable broths, eggs, buttermilk, kumyss, cottage

cheese, bread of all kinds, granola, granose, gluten preparations, and other of the excellent health foods produced by the Sanitarium Health Food Company, Battle Creek, Mich. Granose is especially to be recommended for cases of this sort, on account of its value in the cure of constipation, and in the relief of dyspeptic symptoms. It is also a very delicious and palatable article of food. It may be used with advantage during the entire period of pregnancy.

Water should be taken freely in quantities of from two to four pints daily. Tea and coffee must be carefully avoided. Ordinary butter is also unwholesome. Beer and all kinds of alcoholic liquors are exceedingly detrimental. Cases in which the tongue is coated and in which there is a tendency to flatulence, acid stomach, diarrhea, biliousness, sick headache, or in which similar conditions exist, charcoal may be advantageously taken after each meal as an intestinal disinfectant. The antiseptic charcoal tablets made from the author's formula by the Modern Medicine Company, of Battle Creek, Mich., have proven to be especially valuable in these cases, particularly as a means of combating constipation and biliousness. In cases in which the stomach is very much disordered, lavage or stomach washing by means of the stomach-tube may be advantageously practiced.

The importance of intestinal antiseptics in these cases was very forcibly impressed upon the writer by a case seen in consultation a number of years ago, in which the patient died of sepsis a week after confinement, but without giving any symptom whatever of inflammation or sepsis in connection with the uterus or pelvic viscera. The sepsis was evidently due to a hearty meat dinner. Enemas which were administered brought away large quantities of extremely purulent material. The patient, an unusually strong and vigorous woman, thinking herself beyond any danger of injury, transgressed the strict dietetic orders given her by her physician, and died in consequence. The suggestions respecting intestinal antiseptics should be carefully followed for at least a few weeks prior to confinement and for two or three weeks after-

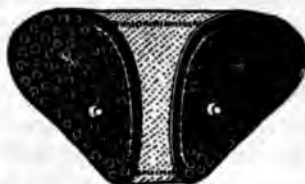
ward. It is, in fact, far better that the same measures should be continued during the entire pregnancy and nursing period, and women who wish to attain the highest standard of health and vigor at all times, will find it advantageous to adopt, as their habitual diet, the simple antiseptic dietary described.

A word should be said with reference to the application of antiseptics to the care of the infant. This relates especially to the care of the cord. The cord having been properly tied, is thoroughly cleansed, first with soap and water, and then with an antiseptic solution, the bichloride solution, 1-10,000, or the sulphate of copper solution, 1-5000, being employed for the purpose. The solution should be as hot as can be applied safely. After drying, without rinsing off the antiseptic solution, absorbent cotton, which has previously been boiled in a 1-10,000 solution of corrosive sublimate or 1-5000 solution of sulphate of copper, and afterward carefully dried, is applied about the cord in such a manner as to thoroughly protect it. A good method of making the application is to make an opening through the center of a properly prepared layer of antiseptic cotton, large enough to lay over the cord. Slip this over the cord, then fold up the edges around the cord, lay flat upon the abdomen, and cover with a proper bandage. When treated in this manner, the stump of the cord will usually separate in four or five days, and the resulting raw surface will quickly heal. The old method of treatment often involved an ugly suppurating ulcer, which was not infrequently very troublesome to heal.

Many women, especially women of feeble muscular development, and hence most women in civilized countries who are not accustomed to active muscular pursuits, suffer, after confinement, from a relaxed condition of the abdominal muscles, and in consequence, prolapse of the bowels, stomach, and often liver and kidneys. A great variety of nervous troubles and other disorders, such as constipation, indigestion, headache, and still more serious maladies, as Bright's disease and consumption, are the outgrowth of this prolapse of the



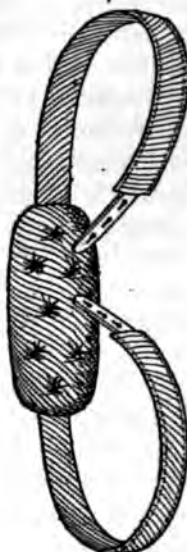
Fig. 4.



A



Fig. 5



B

Fig. 6

THE NATURAL ABDOMINAL SUPPORTER.

viscera. Backache, from which so many women complain, is more commonly due to this cause than to any derangement of the pelvic organs, although displacements of the womb and ovaries and inflammation of these organs are very likely to follow displacement of the abdominal viscera.

As a precaution against this unfortunate consequence of the long-continued stretching of the abdominal muscles during pregnancy, and the inability of the undeveloped muscles to at once contract after childbirth so as to properly support the internal organs, it is important that artificial means should be employed for a time after confinement, to support the abdominal contents in place. Various abdominal supporters have been recommended for this purpose, but few have been found satisfactory. Supporters which are applied to the whole abdominal wall are unsatisfactory for the reason that the lower anterior portion of the abdomen is the only point where the support is really required.

The Natural Abdominal Supporter. — This instrument, well shown in the accompanying cuts, has been devised for the purpose of supporting the contents of the abdomen in a natural way, when prolapsed, by a means as nearly natural as possible. Patients have often said to the writer, "When I am on my feet, I feel that I must hold myself up with my hands," at the same moment placing the hands across the lower abdomen and making pressure upward. Taking a hint from this, we have prepared the supporter which is herewith shown, and which consists of two hard rubber pieces connected by an elastic webbing, which rest against the lower abdomen, being carefully shaped so as to make a uniform pressure, and second, a set of steel springs attached to a back piece and so adjusted as to make pressure upon the hard rubber plates simultaneously backward and upward. The action of the supporter is almost a perfect imitation of the hands in lifting the prolapsed abdominal contents. After trying every form of supporter offered in the market, we have found "The Natural Abdominal Supporter" more satisfactory than any other, and have employed it in a very

large number of cases. It is manufactured and sold by the Modern Medicine Co., Battle Creek, Mich.

The measures outlined in this chapter are presented in addition to the directions elsewhere given in this volume for the proper care of the lying-in woman.

GLOSSARY.

Abnormal, unnatural, unhealthy.
Absinthe, a narcotic and intoxicating drink. Made from wormwood, and much used in France.

Accoucher, obstetrician.

Amanitine, the poisonous principle of a certain kind of fungi.

Amnion, the membrane surrounding the foetus before birth.

Anæmic, a condition characterized by poor and deficient blood.

Anæsthesia, absence of natural sensibility.

Aneurism, a disease of a blood-vessel, characterized by dilatation.

Anodyne, a remedy used for the relief of pain.

Ante-natal, before birth.

Aorta, the great artery of the body.

Atrophy, wasting, diminution in size.

Auricle, one of the upper cavities of the heart.

Axilla, the armpit.

Caseine, the coagulable part of milk.

Catamenial, pertaining to the menstrual flow.

Cellulose, the material composing the walls of vegetable cells.

Chorion, transparent membrane surrounding the foetus.

Cilia, delicate hairs.

Coccyx, a number of small bones forming the end of the spinal column.

Cuticle, the skin.

Cutaneous, pertaining to the skin.

Decoction, an extract prepared by boiling vegetable substances in water.

Defecation, the act of voiding excrement from the body.

Depilatories, substances having the power to remove hair and make bald or bare.

Diaphragm, the muscle separating the thorax from the abdomen.

Diagnosis, the determination of disease.

Enemata, plural of enema.

Eliminative, a remedy having the power to expel or throw off, or cause to disappear from the body.

Emollient, an external application to allay irritation, swelling, etc.

Emulsion, a soft, liquid substance

- of the consistency of milk, composed of fine oil globules in suspension.
- Excretory*, having the power of throwing off waste matter.
- Farinaceous*, pertaining to meal or flour, starchy.
- Flatulence*, a condition in which there is an accumulation of gas in the stomach or intestines.
- Follicle*, a small sac or gland.
- Fusiform*, shaped like a spindle.
- Gynecologist*, a specialist in diseases peculiar to women.
- Hasheesh*, a narcotic drug prepared from Indian Hemp.
- Hypertrophied*, abnormally increased in size.
- Laxative*, a remedy that relaxes or loosens the bowels.
- Mammalia*, that class of animals whose females suckle their young.
- Meconium*, the substance which first passes the bowels of infants.
- Molecular*, consisting of or pertaining to molecules.
- Morphologically*, pertaining to the science which describes the ideal forms of organs in plants and animals.
- Nitrogenous*, containing nitrogen.
- Obstetrics*, the art of midwifery.
- Oleaginous*, oily or fatty.
- Ossification*, the state of being changed into a bony substance.
- Parturition*, the act of childbirth ; delivery.
- Pedicle*, support, stalk.
- Periphery*, the circumference of a circle, the outer boundary of an object.
- Peristaltic*, contracting movements of the alimentary canal whereby its contents are forced onward.
- Plethora*, overfullness.
- Polypus*, a tumor with a narrow base resembling a pear.
- Post-mortem*, after death.
- Pupillary*, pertaining to the pupil of the eye.
- Purgative*, a medicine that loosens the bowels.
- Pyriform*, having the form of a pear.
- Saponification*, the chemical change which takes place when fatty substances and alkalies are mingled together.
- Sciatica*, neuralgia of the large nerve of the hip.
- Sebaceous*, affording a fatty secretion.
- Sinus*, a cavity wider at the bottom than at the entrance.
- Sphincter*, a circular muscle that contracts or shuts the opening of a hollow organ.
- Syncope*, fainting or swooning.
- Tendinous*, full of tendons ; sinewy.
- Varicose*, enlarged condition of the veins.
- Vascular*, pertaining to the blood-vessels, abounding in blood-vessels.
- Ventricle*, one of the lower cavities of the heart.
- Viscera*, the contents of the great cavities of the body, as abdomen, thorax, etc.

EXPLANATION OF PLATES.

PLATE I.—Low Forms of Life. Fig. 1. The *Protococcus*, a form of microscopic vegetable life. a. The usual form; b. A stage in which long filaments are formed, by means of which it moves about in the water like an animal.

Fig. 2. The *Amoeba*, one of the most lowly forms of animal life. a. The common pond amoeba; b. The human amoeba, or white blood-corpuscle; c. Shows four white blood-corpuscles among a large number of red ones; d. An amoeba taking food; e. An amoeba putting out a foot in the act of locomotion.

Fig. 3. a to c, union of two of the forms shown in Fig. 1, prior to multiplication; d to g, multiplication by division; h to j, reproduction of amoeba.

PLATE II.—The Pelvis. Fig. 1. Human male pelvis. Fig. 2. Human female pelvis. Fig. 3. Canal of female pelvis. Fig. 4. Pelvis of Guinea pig. Fig. 5. Pelvis of Guinea pig showing expansion to facilitate parturition.

PLATE III.—Fig. 1. Shows a flower with its sexual apparatus and special provision for fertilization by insects. Figs. 2 to 5. The Pollen or fertilizing element of different species of plants. Fig. 6. Pollen case bursting and discharging its contents. Fig. 9. a. anthers, laden with pollen, closely applied to the ends of b, the pistils in the act of fertilization; c. the ovules, which develop, after fertilization, into seeds.

PLATE IV.—Fig. 1. The Ovum after fecundation, showing spermatozoon within its envelope. Figs. 2 to 6 illustrate the segmentation of the ovum. Fig. 7. A, Spermatozoon of frog; B, Spermatozoon of triton; C, Spermatozoon of finch; D, Spermatozoon of field mouse; E, Spermatozoon of hedgehog; F, Spermatozoon of sheep; G, Human Spermatozoa. Fig. 8. A, Ovum from fœtus; B, Immature ovum of pigeon; C, Immature ovum of rabbit; D, Ovum of parasitic worm.

PLATE V.—Fig. 1. W, Womb, partly covered by the peritoneal membrane; N, Neck of womb; F, F, Fallopian tubes; V, V, Vagina, slit open so as to show interior; O, O, Ovaries. Fig. 2. Double uterus—a very rare condition. Fig. 3. A diagram showing the interior of the womb; C, cavity of the body of the womb; I, Internal os; E, External os.

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PLATE X.—A Grecian Model of the female form as illustrated by the celebrated statue, *Venus of Milo*. B, Parisian belle. C, View of internal organs of a woman addicted to tight-lacing, showing deformity and displacement of stomach and liver; D and E, Livers deformed by tight-lacing.

PLATE XI.—Light Gymnastics. Illustrates some of the simpler forms of free-hand, trunk, dumb-bell, Indian-club, and wand exercises.

PLATE XII.—Postural Treatment for prolapsus and retroversion.

PLATE XIII.—Fig. 1. Shows the womb in a state of partial prolapsus. **Fig. 2.** Shows the womb prolapsed so as to appear externally, having dragged down with it the posterior wall of the vagina.

PLATE XIV.—Fig. 1. Anteversion of the womb with partial flexion, showing bladder compressed. **Fig. 2.** Anteflexion of the womb.

PLATE XV.—Fig. 1. Retroversion of the womb. **Fig. 2.** Retroflexion of the womb.

PLATE XVI.—Fig. 1. Partial laceration or rupture of the perineum resulting in rectocele, C; Cystocele, B; and anteversion of the womb, A. **Fig. 2.** Complete rupture of the perineum, with retroversion of the womb.

PLATE XVII.—Fig. 1. Side profile of a German peasant woman, twenty-nine years of age. Until twenty years of age she was accustomed to carry heavy weights upon her head, often carrying a weight of ninety pounds upon the head two or three miles without stopping to rest. Never had trained in gymnastics. It is a perfectly natural figure, and doubtless represents very nearly the ideal female form. **Fig. 2.** Side profile of a woman of the same age, who through neglect of muscular exercise, and by corset wearing and the wearing of tight bands and heavy skirts, had acquired the weak and deformed figure shown.

PLATE XVIII.—Fig. 1. Outline of a well-developed man. **Fig. 2.** Outline of a well-developed woman of twenty-six years, whose figure had once been deformed by a corset, but had been restored to symmetry by physical exercise. **Fig. 3.** A bronze Venus. **Fig. 4.** Outline obtained by the author from a young Italian peasant woman, an artist's model in Paris.

PLATE XIX.—Fig. 1. A natural figure, showing the stomach, liver, and other organs of the abdomen in normal position. This figure is copied from a drawing by the celebrated German anatomist, Ziemssen. **Fig. 2.** A figure which has been deformed by tight lacing; the stomach, liver, kidneys, bowels, and other organs of the abdomen are crowded several inches out of position. This is not an imaginary sketch, but represents exactly the condition of a young woman who claimed she had never laced tightly, but had worn the ordinary conventional dress.

PLATE XX.—Fig. 1. Outline of a woman of forty-two years, who, when a young woman, had compressed the waist for the purpose of getting rid of an enlarged spleen, which was finally crowded down below the waist-line, and, finding itself cut loose from its moorings, wandered about in all parts of the abdominal cavity. When first examined, the spleen—four or five times its normal size—lay between the uterus and the bladder, and was mistaken for a fibroid tumor. I discovered my error the next day, when I found the spleen lying several inches distant from its position of the day before. **Fig. 2.** Is a front-view outline of the same patient. The solid lines *S* and *L* indicate the position in which the stomach and liver are found.

PLATE XXI.—Fig. 1. The outline of a young woman who supposed she had always dressed healthfully, having worn a health corset and suspended her clothing from her shoulders. The so-called health corset was tight and rigid with stays, and the skirt bands were also tight and the skirts heavy. In consequence the bowels and stomach were prolapsed, the lower border of the stomach reaching three inches below the umbilicus. **Fig. 2.** The solid lines within the figure indicate the position of the stomach, liver, and right kidney. The dotted lines indicate the lower borders of these organs when in normal position. The young woman was in most wretched health. She had suffered for many years from nervous dyspepsia, and also from pelvic congestion and displacement of the uterus and ovaries.

Fig. 3. Outline of a young woman whose figure had not been spoiled by tight-lacing or tight skirt-bands. The dotted lines show the change in her figure occasioned by normal respiration. **Fig. 4.** Shows the result of corset-wearing, tight skirt-bands, and heavy skirts. The dotted lines indicate the change in the figure produced by the artificial mode of respiration commonly termed clavicular respiration, the so-called "female type" of respiration induced by constriction of the waist.

PLATE A.—Fig. 1. F, Fundus, or body, of womb; Cu, Cavity of uterus or womb; Cr, Cervix, or neck of womb; Ca, Canal of cervix; S, Sacrum; V V, Vagina; R, Rectum; P, Perineum; A, Anus; M V, Mons veneris; S, Symphysis pubis; B, Bladder; Cl, Clitoris; U, Urethra; N, Nymphæ, or labia minora; L, Labia majora. **Fig. 2.** Vascular tumor of the urethra. **Fig. 3.** Inflammation of urethral glands.

PLATE B.—A, Erosion, or so-called ulceration of the neck of the womb; B, C, D, E, F, different forms of laceration or rupture of the womb; D, A case of rupture somewhat resembling cancer; F, Slight rupture with cystic degeneration.

PLATE C.—A, Rupture of the neck of the womb on one side only; B, Appearance of os in health; C, Cancer of the neck of the womb; D, Polypus tumor of the womb.

PLATE D.—A, shows the appearance of the breast at the beginning of cancer, a, indicating the retracted condition of the nipple; B, Cancer of the breast in an advanced stage.

PLATE E.—Figs. 1 and 3. Embryos of Dog. **Figs. 2 and 4.** Human Embryos at corresponding periods of development.

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PLATE G.—Figs. 1 and 3. Natural female form. **Figs. 2. and 4.** Female figure deformed by tight-lacing.

PLATE H.—Different modes of deforming the body practiced by various nations.

PLATE J.—Grecian and Hawaiian styles of dress. Foot of Chinese lady deformed by bandaging, and slipper worn by aristocratic Chinese ladies.

PLATE K.—Four outline figures, showing the relations of healthful and unhealthful dress to deformities of the figure. **Fig. 1.** Copied from a fashion plate. **Fig. 2.** A healthfully dressed woman. **Fig. 3.** An unnatural woman attempting to conceal defects. **Fig. 4.** A natural woman whose figure requires no appendages.

PLATE L.—Illustrates the methods of employing "expression" and "turning," the proper use of which greatly lessens the pains of childbirth.

PLATE M.—Various exercises for the treatment of uterine displacements.

PLATE N.—Fig. 1. The uterus, U, in normal position, showing the left round ligament at R. **Fig. 2.** The uterus, U, retroverted, showing left round ligament stretched and tense.

PLATE O.—Fig. 1. Pneumographic tracings of natural and unnatural breathing.

FIGS. 1, 2, 3.—Tarnier's Obstetric Cloth.

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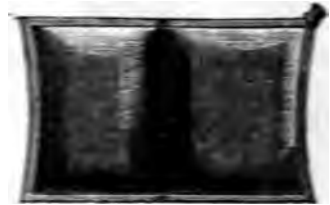
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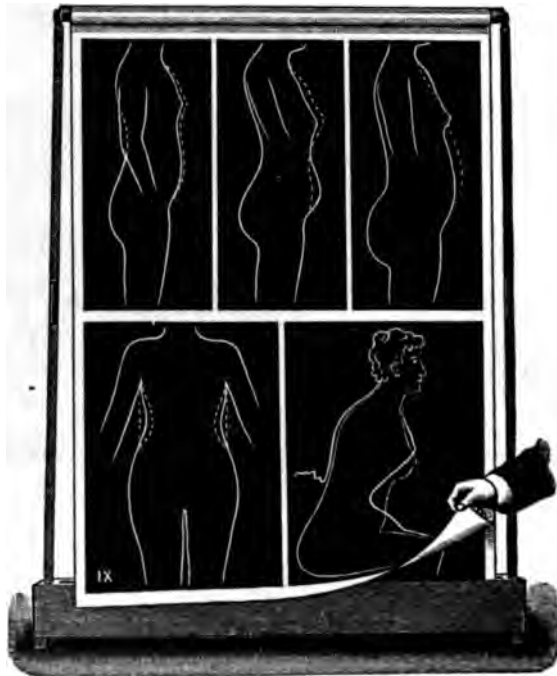
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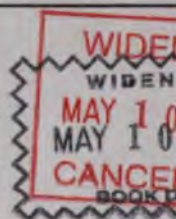
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